Foreword by Dan Egeler

Learning to Respond to a Dangerous Ideology

SCIENTISM *AND* SECULARISM

J. P. MORELAND

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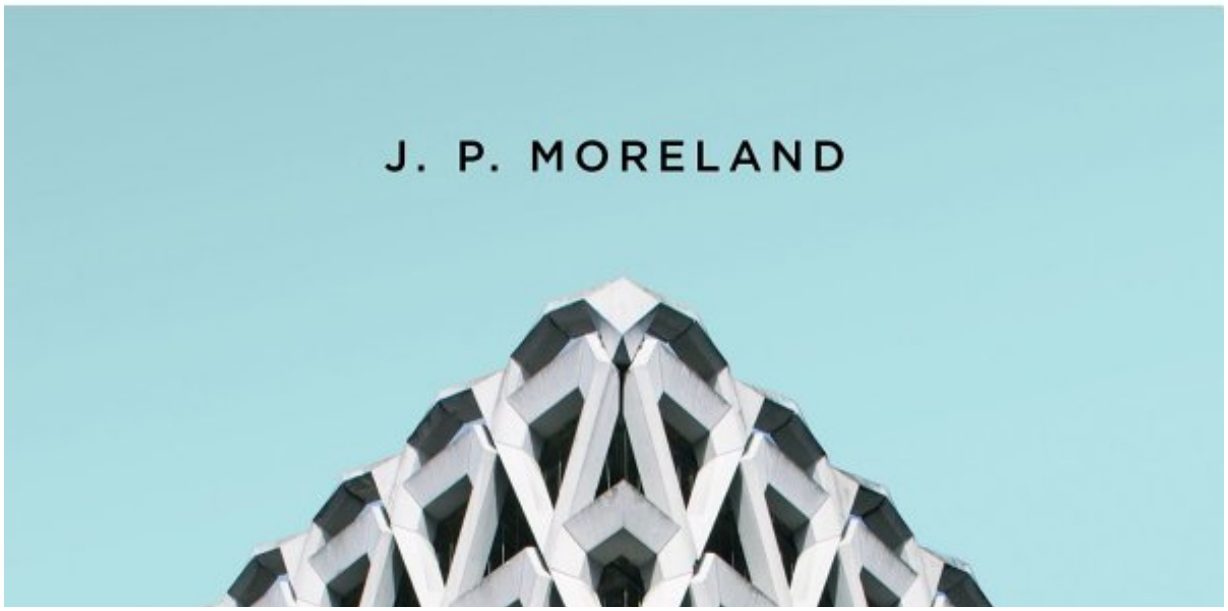

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“Science is a wonderfully useful discipline, but in recent times it has been distorted into *scientism*, the view that science is the ultimate path to truth in any area of reality. Based on that false adulation of science, many have denied the value of religion and philosophy, and many have rejected the claims of divine revelation in the Bible. J. P. Moreland is a respected Christian thinker who has studied both science and the Scriptures in considerable depth. He clearly demonstrates the fallacies of the arguments for scientism. He shows how Christians can defend their faith against scientistic objections, while affirming genuine science as a gift from God.”

John M. Frame, Professor of Systematic Theology and Philosophy Emeritus, Reformed Theological Seminary, Orlando “Scientism is a silent killer. Despite its name, it is neither scientific nor rational. Yet it attempts to kill our knowledge of God and the good life by claiming that the methods of science are sufficient for any knowledge we may need to know. J. P. Moreland, one of our greatest living philosophers, exposes scientism for what it is—a self-refuting and knowledge-stopping claim. This judgment in no way undermines real science, but rather encourages it. Once more, we are in Moreland’s debt.”

Douglas Groothuis, Professor of Philosophy, Denver Seminary; author, *The Soul in Cyberspace* “Moreland offers a brilliant critique of scientism and a comprehensive defense of theistic science. As valuable as this critique and defense is, I believe his book’s greatest contribution is his wake-up call to Christian leaders of how ‘scientism has forced the church to offer the gospel simply because it works rather than because it is true and can be known as such.’ Kudos to Moreland for equipping us to know through scientific evidence and philosophical reasoning that the Bible and the gospel indeed are true.”

Hugh Ross, President, Reasons to Believe; author, *The Creator and the Cosmos*; *Improbable Planet*; and *Why the Universe Is the Way It Is* “Science is a gift from God, but scientism is an idolatrous perversion of that gift that is hostile to the Christian faith and to the proper practice of science. J. P. Moreland rightly contends that Christians need to understand what scientism claims, to recognize its pervasive effects in our society, and to expose its self-defeating pretensions. Moreland has been reflecting on these issues for decades, and I can think of no one better qualified to write on this topic. This incisive takedown of scientism is long overdue and most welcome.”

James N. Anderson, Professor of Theology and Philosophy, Reformed Theological Seminary, Charlotte “J. P. Moreland is one of the great Christian philosophers of our time. He has shown persuasively that we can know God just as well as we can know anything else. If, as philosophers tell as, knowledge constitutes ‘justified true belief,’ Moreland has shown that we can have such beliefs about God—and, thus, objective, as well as subjective, knowledge of him. In this trenchant critique, he shows not only how the ideology of scientism undermines the justifiable confidence that people should have in their knowledge of God, but that scientism ultimately defeats

itself. Scientism claims that hard sciences such as physics, chemistry, and biology provide the only genuine knowledge of reality. Yet, as Moreland shows, scientism does not satisfy its own requirement, because it is not itself based upon scientific evidence or scientific method. Instead, Moreland shows with many concrete examples that many people in our culture simply *assume* that the hard sciences provide the only foundation for knowledge, leaving them with an impoverished and materialistic view of reality that denies them the joy, hope, and meaning that comes from the knowledge of God. For this reason, *Scientism and Secularism* is a philosophical treatise with a practical message for anyone wanting to live life more abundantly in accord with genuine knowledge of God. Highly recommended."

Stephen C. Meyer, Director, Center for Science and Culture, Discovery Institute; *New York Times* best-selling author, *Darwin's Doubt* "If you've ever been tempted to dismiss a moral, philosophical, or theological belief because you were convinced only science gives real knowledge—or if it's been done to you—then you've been taken in by scientism. This popular notion has crippled the confidence of multitudes of Christians, yet in *Scientism and Secularism*, philosopher J. P. Moreland handily exposes it for the fraud it is. Moreland cuts through the confusion with his characteristic clarity, insight, and surgical precision, deftly refuting the notion that only science can give knowledge while all else is mere opinion, feeling, or faith. Here is Moreland doing what he does best—dispatching foolishness with careful thought and rigorous assessment. For those taken in by the silliness of scientism, this book will be an eye-opener. Moreland's effort also serves as a tutorial in the disappearing art of clear thinking for those floundering in the murky waters of secularism."

Gregory Koukl, President, Stand to Reason; author, *The Story of Reality* and *Tactics*

"With cross-disciplinary depth and precise argument, J. P. Moreland not only puts science back in its lane, he defines the lane—and in doing so rescues true science from self-destructive overreach. Anyone responsible for educating the next generation of scientists, theologians, or anyone in between needs this surprisingly readable book."

David Schmus, Executive Director, Christian Educators Association International "J. P. Moreland's *Scientism and Secularism* should be mandatory reading for serious Christians who want to intelligently engage in the interface of philosophy and science. Moreland elegantly guides the reader through concepts typically reserved for serious analytic philosophers and academics. In doing so, he provides a desperately needed and highly accessible treatment of elite-level arguments that both seasoned philosophy veterans and enthusiastic amateurs will enjoy. Moreland thus demonstrates a rare ability to distill complicated and abstract philosophical concepts into a framework for everybody to understand.

While scientists who are not philosophically inclined always tend to deride approaches that are not strictly empirical as superfluous, in recent years this tendency has accelerated. Major figures in both academic and popular science characterize philosophy as an anachronism to be abandoned, with only experimental or observable data worthy of discussion. Moreland argues expertly that not only are such claims internally inconsistent, this central dogma of scientism erodes the serious pursuit of knowledge. Scientism isn't just poor science, it's poor thinking.

Moreland has crafted an eminently readable text that clearly demonstrates that this kind of crude scientistic thinking should be eschewed by all thinkers not dogmatically committed to worshipping at the altar of reductive physicalism. *Scientism and Secularism* is a book that should be read by any serious Christian who is motivated to integrate science, philosophy, and faith cogently and cohesively."

Jeffrey M. Schwartz, MD, coauthor, *The Mind and the Brain* and *You Are Not Your Brain* "The greatest barrier to communicating a Christian message in our day is the fact/value split. It decrees that truth is to be found only in the fact realm, while relegating morality and theology to the realm of values, which it defines as subjective, private, personal preferences. The result is that when Christian speak, people do not even 'hear' them making objective truth claims. That's why this book by J. P. Moreland is so important. Moreland challenges the fact/value split, showing that it rests on the untenable assumption of scientism. Then he makes a persuasive case that fields like philosophy, morality, and theology yield genuine knowledge."

Nancy Pearcey, author, *Total Truth*; *Finding Truth*; and *Love Thy Body* "For decades, people have been weighing in on why children are leaving the faith in droves. J. P. Moreland gets to the core and offers information needed to stop the exodus. Every Christian parent and educator must read this book."

Catherine Waller, Executive Editor, Defendable Faith Institute, *DeepRoots Bible Curriculum for Defendable Faith*; homeschool parent

Scientism and Secularism

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Scientism and Secularism: Learning to Respond to a Dangerous Ideology

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To Stephen Meyer
Dear Friend, Courageous Soldier, and Humble Leader

The idea that knowledge—and of course reality—
is limited to the world of the natural sciences is the
single most destructive idea on the stage of life today.

Dallas Willard

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Foreword

Our children are growing up in a post-Christian culture in which the public often views people of faith as irrelevant or even, in some cases, extremists. But the world desperately needs people of faith who can contribute to public life and enhance the public conversation. So how do we raise up a generation of Daniels to be the voices of faith in a cultural Babylon?

Philip Yancey, in *What's So Amazing about Grace?*, develops a word picture that provides a powerful reminder of the approach that must be taken when mentoring this next generation as ambassadors for Christ. Yancey says, A phrase used by both Peter and Paul has become one of my favorite images from the New Testament. We are to administer, or "dispense," God's grace, say the two apostles. The image brings to mind one of the old-fashioned "atomizers" women used before the perfection of spray technology. Squeeze a rubber bulb, and droplets of perfume come shooting out of the fine holes at the other end. A few drops suffice for a whole body; a few pumps change the atmosphere in a room. That is how grace should work, I think. It does not convert the entire world or an entire society, but it does enrich the atmosphere.

> Now I worry that the prevailing image of Christians has changed from that of a perfume atomizer to a different spray apparatus: the kind used by insect exterminators. *There's a roach!* Pump, spray, pump, spray. *There's a spot of evil!* Pump, spray, pump, spray. Some Christians I know have taken on the task of

"moral exterminator" for the evil-infested society around them.[1]

The challenge is to uncompromisingly share absolute truth while not coming across as "bug spray." Instead, we should be about the business of dispensing the "perfume of Christ." The twenty-first century will require of believers a willingness to adopt winsome methods of engagement amid an environment of suspicion and skepticism.

In this book, J. P. Moreland articulates a way of friendly engagement with the prevailing worldview of scientism. He makes the case that *ideas matter*. As he explains, As the ideas that constitute scientism have become more pervasive in our culture, the Western world has turned increasingly secular and the power centers of culture (the universities, the media and entertainment industry, the Supreme Court) have come increasingly to regard religion as a private superstition. It is no surprise, then, that when our children go to college, more and more of them are just giving up on Christianity.

Scientism says that the hard sciences alone have the intellectual authority to give us knowledge of reality. Everything else—especially ethics, theology, and philosophy—is, at least according to scientism, based on private emotions, blind faith, or cultural upbringing. As a result, these disciplines, long regarded by the Western world as a source of knowledge and a path of wisdom, are said to give us no truth about reality, at least no truth that could be supported by evidence and argumentation—which, according to scientism, means that theology and philosophy offer no truth at all.

Moreland provides a particularly persuasive argument that counters the popular perception that science can explain *everything*. In reality, he says, there are many things that science *cannot* explain. And what makes all of this

especially interesting is that theism *can* explain those very things. Moreland gives examples: science cannot explain the origin of the universe; the origin of the fundamental laws of nature; the fine-tuning of the universe; the origin of consciousness; and the existence of moral, rational, and aesthetic objective laws and intrinsically valuable properties. And these are all topics that theism *can* adequately address.

Moreland concludes with a very helpful compilation of strategies for integrating issues between faith and science. As a Christian living in a secular culture, I would concur with his plea: I concur with and applaud Moreland's analysis of the danger posed by scientism, and the very practical guidelines he offers for responding to that danger—in a winsome but convincing way.

Dan Egeler Former President, Association of Christian Schools International

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1. Philip Yancey, *What's So Amazing about Grace?* (Grand Rapids, MI: Zondervan, 1997), 146. Used by permission of Zondervan.

Acknowledgments

Over the years and in a number of ways, many people have contributed to empowering me to write this book. In fact, there are far too many to mention. However, I want very much to acknowledge the impact of three people without whom this book would have never been written. First, I have learned so much philosophy and philosophy of science over the years from my good friend and colleague Garry DeWeese (I have never been able to figure out why he has two Rs in “Garry.” Isn’t it supposed to be “Gary?”), that it is hard to know where his thinking ends and mine begins. Brother, you have been a real blessing. Second, it is difficult to know what to say to my Crossway acquisitions editor, Justin Taylor. He went far, far over and above what is required of an editor. Justin, you took this book under your wings and spent countless hours making it accessible to parents, pastors, school teachers, and lay readers of all kinds. Thank you for your effort and excellence. Finally, I have worked with a number of publishers, and Bill Deckard is in a league of his own as an editor. Bill, I can’t thank you enough for your hard work on this book. Crossway is lucky to have you on the team, as am I.

Introduction

I grew up in the 1950s, in a working-class neighborhood outside of Kansas City, Missouri. My father died when I was in second grade, and I was raised largely by my mother, though she did marry again during my seventh-grade year. My mother and stepfather were good to me, though neither could help much with my religious instruction. Neither were educated beyond high school. My mother worked in a paper cup factory, and my stepfather was a welder. We attended a mildly liberal United Methodist Church, though it didn't seem to have much impact on any of us.

One thing was constant through my childhood: a love for science. It goes back as far as I can remember.

I was a veritable glutton for all things scientific. On my fifth birthday, I got a microscope and spent hours and hours looking at slides. On my next birthday, I was rewarded with a chemistry set, and to this day I have no idea how I kept from blowing up our home. I had rock, moth, insect, and leaf collections, and I consumed a series of books for my age group on different branches of science. I remember dissecting toads (I used chloroform that my mom gave me, but I admit I wasn't sure the poor things were really konked out!) and trying to find the different organs inside them.

When I was eight, a friend and I created our own weather station and made detailed records of various weather factors. (We gave our own weather predictions which, at the time, were about as good as those that came from the television weatherman!) My childhood was filled with science and sports, and I loved them both.

In middle school (we used to call it “junior high”) and high school, my love for science continued to grow. My middle school biology teacher, Mr. Shain, made the subject come alive for me. And in high school, two teachers—Mrs. Manning (math and physics) and Mr. Endicott (chemistry) took me under their wings and mentored me in the respective subjects. As a result, in my junior year, my science fair project was submitted to the Greater Kansas City Science Fair, and a friend and I won second prize in physics. In my senior year, we won first prize in chemistry, and I was offered—and accepted—a sizable fellowship to major in chemistry at the University of Missouri.

In college, my interests developed in physical chemistry, and I was so captured by it that I became one of the three top chemistry majors at the university. One summer, I was one of four juniors to be selected to work as a chemist in industry. What a summer job! All my previous summers were taken up with (pretty bad) factory jobs and construction work. But, lo and behold, that summer I got to wear a shirt and tie every day, working in the chemistry lab at a major firm in Kansas City doing atomic absorption spectroscopy. They offered me a full-time, well-paying job when I graduated. I also joined a chemistry honorary fraternity called Alpha Chi Sigma. My last semester at Mizzou, I was offered a full ride to the University of Colorado to do research in nuclear chemistry. Looking back, I realize that I excelled at science not only because I had a natural talent for it, but also because I truly loved it.

But something happened to me in November of 1968 (my junior year) that would alter my life and my plans for the rest of my life. I was led to Christ by a Campus Crusade for Christ staff worker after weeks of meeting with him to ask questions about the evidence for Christianity. I immediately

joined the Jesus Movement and became (and by God's grace, continue to be) a radical follower of the Lord Jesus.

It would have been a wonderful calling to be a Christian chemist. Science is a noble and strategic vocation. And far from fearing science and what it will reveal, I regularly pray that God will send many Christians into the sciences to conduct their work and make discoveries with humble Christian confidence.

But upon conversion, a whole new world of ideas opened to me: history, biblical studies, theology, and most importantly, apologetics and philosophy (the latter of which I had previously thought was simply "psychology" misspelled!). I sensed my own calling was to turn down the chemistry fellowship and join the staff of Campus Crusade, which I did—and stayed on staff for ten years. My love for these newfound subjects led me to get a ThM in theology at Dallas Seminary, an MA in philosophy at the University of California–Riverside, and a PhD in philosophy at the University of Southern California. My love for science influenced my areas of specialization, namely, philosophy of science, philosophy of mind, and metaphysics (which studies the nature of reality).

Sadly, during the process of my various studies, I constantly bumped into something dark, hideous, and, I dare say, evil. It was the philosophical notion of *scientism*, roughly the view that the hard sciences alone have the intellectual authority to give us knowledge of reality. Everything else—especially ethics, theology, and philosophy—is, at least according to scientism, based on private emotions, blind faith, or cultural upbringing. As a result, these disciplines, long regarded by the Western world as a source of knowledge and a path of wisdom, are said to give us no truth about reality, at least no truth that could be supported by evidence and argumentation—which,

according to scientism, means that theology and philosophy offer no truth at all.

One of the great ironies of all of this is that *scientism is not a doctrine of science*; rather, it is a doctrine of philosophy. More specifically, scientism is actually a doctrine of epistemology (the branch of philosophy that studies what knowledge is and how we obtain it).

Here is another irony: *scientism distorts science*. By its very nature, science cannot claim to be the only way to know reality. I hope that one of the results of this book will be to equip you to see and explain to others that scientism is not a scientific view at all, and that it, in fact, does not serve or celebrate the incredible gift that science is.

In this book, I will provide you with reasons why scientism is harming our children, destroying the church, and undermining our ability to get a fair hearing for the gospel. But let me be clear about something that by now should be obvious: My problem is not with science properly practiced. I love science. My issues are with scien-*tism*. Indeed, I believe that part of my life calling from God himself is to stand against scientism and warn and equip my fellow believers about what scientism is, to show that it is not only false and irrational but a grave danger. The book in your hands is my attempt to fulfill that calling.

So enjoy, think hard, and become an activist against scientism (and for genuine science).

J. P. Moreland

Distinguished Professor of Philosophy
Talbot School of Theology, Biola University

1

The (Scientistic) Air We Breathe

I was in the middle of a nine-day stay in the hospital following the removal of a cancerous tumor in my colon on April 27, 2016. During that time, several different shifts of nurses had come and gone. On this particular day, a new nurse came to care for me and take my vital readings.

As we chatted, she asked me what I did for a living. I told her I was a philosophy professor. “Where did you go to school?” she asked. Working backwards, I explained that my PhD in philosophy is from the University of Southern California, my MA in philosophy is from the University of California at Riverside, my ThM in theology is from Dallas Seminary, and my BS in physical chemistry is from the University of Missouri.

A puzzled look came on her face. She mused out loud that I had taken two very unrelated, divergent paths.

Before she could explain, I asked if this was what she meant: I started off in science, which deals with reality—hard facts—and conclusions that could be proved to be true. But theology and philosophy were, well, fields in which there were only private opinions or personal feelings, where no one was right or wrong, or if they were, no one could know who was right. Science was cognitive, and theology and philosophy were personal and emotional.

Looking surprised, as though I had read her mind, she acknowledged that my understanding was exactly what she had in mind.

My nurse was expressing the view called *scientism*. Since scientism is so pervasive today—it is the intellectual and cultural air that we breathe—she could not have even named the worldview she was presupposing and articulating.

What Is Scientism?

Roughly, *scientism* is the view that the hard sciences—like chemistry, biology, physics, astronomy—provide the only genuine knowledge of reality. At the very least, this scientific knowledge is vastly superior to what we can know from any other discipline. Ethics and religion may be acceptable, but only if they are understood to be inherently subjective and regarded as private matters of opinion. According to scientism, the claim that ethical and religious conclusions can be just as factual as science, and therefore ought to be affirmed like scientific truths, may be a sign of bigotry and intolerance.

Before looking in more depth at scientism—the view that the hard sciences alone have the intellectual authority to give us knowledge of reality—let me show some concrete examples of it and how it is part of everyday common sense.

Scientism Illustrated *Example: Michael Kinsley*

On June 25, 2001, *Time* magazine featured an article by journalist Michael Kinsley defending stem-cell research on human embryos. He wrote, “These [embryos] are microscopic groupings of a few differentiated cells. There is

nothing human about them, except potential—and, if you choose to believe it, a soul."[1]

Now the first thing to note about his conclusion is that it is bad science, claiming that there is nothing really "human" about human embryos, which is itself a scientifically absurd statement, contradicted by all of the standard textbooks of embryology!

But that's not my point here. Rather, I want to draw your attention to a part of Kinsley's sentence that you may not have noticed. Reread it carefully and note what he presupposes: we *know* scientific facts about human embryos, but we only *believe* things about human souls. For Kinsley, belief in a soul is not an item of knowledge. In his view, there is no evidence for it. He would probably put it in the same category as a unicorn. You can believe it if you want, perhaps because someone told you that it exists or because you wish that such a creature is out there, but you've never seen or heard or touched a unicorn and therefore it does not really count as knowledge. Kinsley undoubtedly thinks this kind of belief belongs in the pages of fantasy literature, not in the items of what we can truly know and be justified in believing. But Michael Kinsley is not advocating science. He's expressing scientism.

Example: Marilyn vos Savant For a long time, Marilyn vos Savant (listed in five editions of the Guinness Book of World Records as the human with the highest recorded IQ) has written a column in Parade magazine titled "Ask Marilyn," where people submit questions and Savant provides answers. In one post, a man explains that his parents raised him in a certain religion. Now an adult, he still likes the religion, but his friends are trying to get him to rationally consider others. He wonders if Savant

thinks he should consider his friends' arguments or just go on accepting his parents' religion.

Here is Savant's response: "You're smarter than those friends. Religions cannot be proved true intellectually. They come from the heart—and your parents—not the mind. In my opinion, you have behaved wisely [by not listening to your friends' "arguments"]."[2]

Marilyn vos Savant has no problem with this man holding to his parents' religious beliefs—"No harm, no foul," she might say—but she's critical of his friends for trying to reason with him or to persuade him that other religious beliefs are more compelling or truthful or best accord with the evidence.

From reading her columns over the years, I assure you she would not say that *science* comes from the heart and not the mind, or that it comes from what your parents told you. Scientific claims can be proved true. But in her worldview, religious claims cannot. This is not science but scientism.

Example: Scientism in School Scientism is found not only among those writing columns in popular magazines. It is also the required dogma in our schools, where it directly challenges Christianity's claim to be a knowledge tradition. For example, consider the "Science Framework" issued by the state of California in 1989, designed to guide its public schools' science curricula. The document offered teachers advice about how to address students who expressed reservations about the theory of biological macroevolution: At times some students may insist that certain conclusions of science cannot be true because of certain religious or philosophical beliefs they hold. . . . It is appropriate for the teacher to express in this regard, "I

understand that you may have personal reservations about accepting this scientific evidence, but it is scientific knowledge about which there is no reasonable doubt among scientists in their field, and it is my responsibility to teach it because it is part of our common intellectual heritage."[3]

This statement's significance comes not so much from its promoting evolution over creation as from the *picture of knowledge* it presupposes: knowledge about reality comes solely from science, and empirical knowledge claims derived from the hard sciences are the only claims that deserve the backing of public institutions.

This kind of reasoning seems to imply that religious and philosophical claims are simply matters of private feeling, which, by extension, means ignoring claims at the core of ethics, political theory, and religion. Words such as *conclusions*, *evidence*, *knowledge*, *no reasonable doubt*, and *intellectual heritage* become associated with science, giving science the "right" to define reality, while words like *beliefs* and *personal reservations* are associated with nonempirical claims, framing religious beliefs as mere ungrounded opinions. Put simply, the state of California is requiring that all students abide by the dictates not merely of science, but of scientism.

Scientism Defined We have looked briefly at some popular-level expressions, or presuppositions, of scientism, but now let's hear from actual scholars who propose a definition. According to philosopher of science Tom Sorell, "Scientism is the belief that science, especially natural science, is . . . the most valuable part of human learning . . .

because it is much the most [sic] authoritative, or serious, or beneficial. Other beliefs related to this one may also be regarded as scientistic, e.g., the belief that science is the *only* valuable part of human learning. . . .”[4] Sorell notes that “What is crucial to scientism is not the identification of something as scientific or unscientific but the thought that the scientific is much more valuable than the non-scientific, or the thought that the non-scientific is of negligible value.”[5] In other words, when you have competing knowledge claims from different sources, the scientific will always trump the nonscientific.

In scientism, therefore, science is the very paradigm of truth and rationality. If you look carefully at both of Sorell’s quotations, you may discern two forms of scientism: strong and weak. *Strong scientism* implies that something is true, rationally justified, or known if and only if it is a scientific claim that has been successfully tested and that is being used according to appropriate scientific methodology. There are no truths that can be known apart from appropriately certified scientific claims, especially those in the hard or natural sciences. Lawrence Principe correctly notes that, when it comes to strong scientism, the central idea is that “science and its methods provide the *only fully valid route* to gaining knowledge and for answering questions, to the exclusion of other methods and disciplines.”[6]

Weak scientism is still scientism, but it allows for more “wiggle room.” Weak scientism acknowledges truths apart from science, granting them some minimal rational status even if they don’t have scientific support. Nevertheless,

weak scientism still implies that science is by far the most authoritative sector of human knowing.

For practical purposes, weak scientism amounts to pretty much the same thing as strong scientism, though, technically speaking, they do differ. As noted above, weak scientism does not say that the sciences—especially the hard sciences—are the *only* way available to us to achieve knowledge of truth about reality; rather, advocates of weak scientism are willing to grant minimal rational status to at least some disciplines that most would not classify as scientific fields. If some field lacks scientific status or backing, then it is of negligible intellectual value and, if at all possible, the hard sciences (e.g., neuroscience) must take over nonscientific areas (e.g., spiritual teachings—note the number of books claiming that new insights from neuroscience have put spiritual growth on a new plane of authority) or must exert its influence in the more human sciences (psychology, education, etc.) in order to increase the credibility of those fields and to provide us with solid knowledge in them.

And of course, *ideas matter*. Indeed, we are largely at the mercy of our ideas. As the ideas that constitute scientism have become more pervasive in our culture, the Western world has turned increasingly secular and the power centers of culture (the universities; the media and entertainment industry; the Supreme Court) have come increasingly to regard religion as a private superstition. It is no surprise, then, that when our children go to college, more and more of them are just giving up on Christianity. In the next chapter, we will look in greater depth at the impact of scientism on the culture and the church.

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1. Michael Kinsley, "If You Believe Embryos Are Humans . . . ," *Time* (June 25, 2001), 80.
2. Marilyn vos Savant, "Ask Marilyn," *Parade* (October 7, 2001), 25.

3. Cited in Mark Hartwig and P. A. Nelson, *Invitation to Conflict: A Retrospective Look at the California Science Framework* (Colorado Springs: Access Research Network, 1992), 20.
4. Tom Sorell, *Scientism: Philosophy and the Infatuation with Science* (London: Routledge, 1991), 1, his emphasis.
5. Ibid., 9.
6. Lawrence Principe, “Scientism and the Religion of Science,” in *Scientism: The New Orthodoxy*, ed. Richard M. Williams and Daniel N. Robinson (London: Bloomsbury, 2015), 42, my emphasis.

2

Why Scientism Matters

Because scientism is in the air we breathe, we consider it both normal and essential. Very few people are aware of what it does to a culture and to the church. It puts Christian claims outside of the "plausibility structure" (what people generally consider reasonable and rational), which has led to a number of shifts in how our culture processes reality. One of the effects of scientism, then, is making the ridicule of Christianity's truth claims more common and acceptable (which is one of scientism's goals). Even within the church, it has harmed our efforts to produce mature disciples of Christ among both children and adults. Let's take these concerns one at a time.

1. Scientism Puts Christian Claims Outside of the Plausibility Structure

To the extent that scientism is embraced in our culture, our moral and spiritual claims will be "de-cognitivized." In other words, our deepest beliefs about life, knowledge, history, and reality will seem to be utterly implausible—not just untrue, but unworthy of rational consideration.

Consider this diagram:

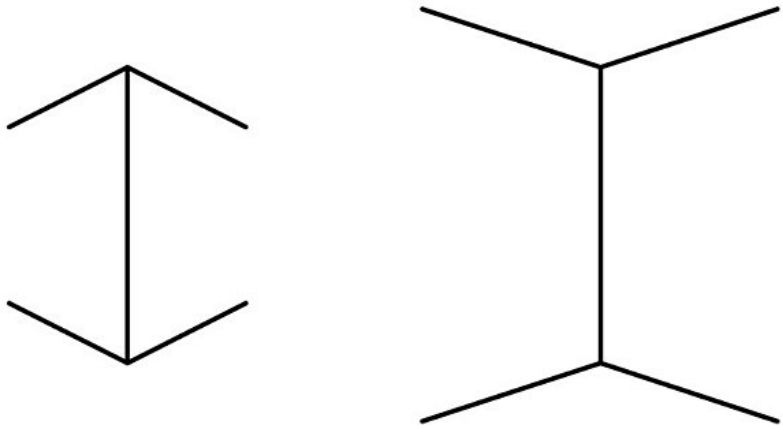

Fig. 2.1

It may seem surprising, but the two vertical lines in the diagram are of equal length. Because we are unconsciously used to seeing representations like this as three-dimensional objects (the left shape is the outside corner of a building; the right is the inside corner of a room), we unconsciously adjust to the two-dimensionality of the figures on the page.

Do you know what happens when people in less technologically advanced cultures see this diagram? Because they are not used to square or rectangular buildings, they have no such subconscious habits. Therefore, they see the vertical lines accurately—as the same length. Without completely *determining* what we see, then, our habits of perception and thought *shape* what we see.

The lesson here is that a culture, which has a set of background assumptions—or, a *plausibility structure*—sets a framework for what people think, which affects how they are willing to listen, evaluate, feel, and behave. The framework shapes what people consider plausible or implausible. For example, claims that the earth is flat are outside our plausibility structure.

Plausibility structures, however, are usually so widespread, and so subtle, that people typically don't even know they are functioning. For example, we are often unaware of the ways in which something like music can affect how we react to a story. If you doubt this, search online for movie trailers that are edited with new music to suggest a very different genre—e.g., a heartwarming romantic comedy using creepy or foreboding music can create a structure that looks more like stalking than love. These plausibility structures may be beliefs or ideas (e.g., religious people are just superstitious; scientists are intelligent), symbols (e.g., someone wearing a white lab coat), or other elements such as music, movies, or television programs.

This can lead to problems with trusting in God. Without our being aware, we all carry with us this cultural map informed by scientism, a set of natural assumptions we make, like self-talk, default beliefs (which we naturally accept without argument), or things we'd feel embarrassed to believe (e.g., claims contrary to the authorities in our cultural map). These may lend us, then, a natural set of doubts about Christianity. People are not typically even aware of how cultural maps affect them. But even though one's cultural map contains crucial ideas that have shaped other beliefs, when the natural assumptions *are* brought to our attention, we often disown them.

Today, the Western cultural plausibility structure emphasizes science and scorns religion. This is why Christian evangelistic efforts are increasingly ineffective. Often, in order to get people to hear the gospel, we have to address solely a person's private, felt needs and promise that Jesus will change their lives and help them. There's nothing wrong with this as long as it is rooted in the deeper claim that Christianity is true, is based on solid evidence,

and can be known to be true. But scientism has forced the church to offer the gospel simply because it works rather than because it is true and can be known to be such.

2. Scientism Has Brought About Several Shifts That Now Define Our Culture

Embracing scientism is like knocking over the first domino, leading to a cascade of other beliefs that will fall by the wayside. This is true when it comes to how our culture defines knowledge, truth, duty, virtue, freedom, and tolerance.

The first shift is in the realm of religion and ethics and is a shift from *knowledge* to *blind faith*. Shortly after the terrorist attack on September 11, 2001, Oprah Winfrey focused an episode of her program on the turn to God since the attack, a turn she herself wished to foster. For those already deadened to cultural shifts, the program was fairly uneventful, but for those with eyes to see, it was breathtaking.

To explain, let me note first what Oprah did not do. She did not get on the air, warn that we were under threat of a terrorist smallpox attack, and urge people to seek protection from smallpox, whatever such protection meant to each individual: If your truth implies that smallpox prevention comes by eating cereal and not eggs for breakfast, then go for it. If it implies that you should attend more movies to relax your immune system, then live out your truth in this way. We shouldn't get hung up on the word we use for "smallpox prevention"—cereal, movie attendance, or whatever—the important thing is to seek prevention, whatever that means to you.

Indeed, Oprah would not even presume to speak about smallpox prevention, since she is not an expert in medicine. Rather, she would bring a doctor on the show to address

such an issue. This is because she, like all of us, would assume that the issue of smallpox prevention is one of objective fact, that there is a body of knowledge relevant to the issue, and that some folks—experts—have the knowledge needed to address the problem.

But this is how Oprah *did* respond to 9/11: She urged people to seek God, "whatever he, she, it, or they mean to you." We should not get hung up in the word we use for him, her, it, or them, she cautioned. The important thing is that we all seek our own truth with renewed vigor.

Now, what assumptions—most likely subconscious—must Oprah Winfrey and her editorial crew be making about religion and the audience's understanding of it? The assumption is that, in contrast to scientific assertions, religious claims are neither factual in nature nor subject to rational evaluation. Religion is not a domain of fact and knowledge, so there are no experts on that subject. Thus, a talk show host's feelings about her own truth regarding religious matters is no more "valid" than anyone else's.

The second shift is in the realm of guidance for living one's life, and it goes from *truth* to *the immediate satisfaction of desire.* Scientism tells us that there is no truth related to the meaning and purpose of life; the difference between right and wrong or virtue and vice; life after death; and, of course, God himself. And even if there were truths in these areas, no one could have a clue as to what they were. It follows that truth as a first-priority guide for living must be dethroned. After all, who can guide his life by an unknowable set of truths that probably aren't really there anyway?

But people need something to guide their lives, and so the absolutization of instant gratification and the satisfaction of personal desire have replaced truth. I leave it to the reader to list the indications that a culture has experienced this

shift (hint: look at liberal, secular American culture and in particular their attitude toward sexual hedonism and its consequences).

The third shift is in ethics, and it goes from positive *duty and virtue* to do-no-harm *minimalism* (which I'll describe below). Given scientism, moral knowledge is impossible. And the loss of moral knowledge has meant a shift from a view in which duty and virtue are central to the moral life, to a minimalist ethical perspective. If duty and virtue are of central concern to the moral life, then there must be moral knowledge available to know what duties and virtues are correct and how one can become a righteous, virtuous person. Remember, moral rules without knowledge degenerate into customs such as "don't eat your peas with a knife," and customs are too trivial to marshal the courage and effort needed to live by and internalize them.

In 1981, Daniel Callahan, then the director of the Hastings Center, wrote an article titled, "Minimalist Ethics," arguing that contemporary American culture had come to emphasize

- the tolerance of all moral viewpoints;
- the transcendence of the individual over the community;
- individual autonomy as the highest good; and
- the voluntary, informed-consent contract (rather than a covenantal model, such as marriage) as the model of human relationships.

Callahan said these diverse moral positions constitute different aspects of a widely accepted moral axiom—that is, minimalist ethics—that can be expressed in a single proposition: One may morally act in any way one chooses so long as one does not do harm to others.[1]

The fourth shift is related to the third, but is manifested in the area of freedom, moving from a *classic* model to a *contemporary* version. Classically, freedom meant *the power to do what one ought to do*. Thus, one is free to play the piano if one has the skills, training, and knowledge necessary to play it. Similarly, one is free in life if one has the power to live in the way one ought to live. Sexual freedom in this context means the power to live a chaste, holy life and to engage skillfully in sexual activity in the way in which we were designed by God—in marital union between husband and wife. Classic freedom is liberating, but a necessary condition of such freedom is the availability of the relevant sort of knowledge. Absent such knowledge, contemporary freedom has come to be understood as *the right to do whatever one wants to do*. Sexual freedom in this context means the right to satisfy one's desires in any way one wishes, with the possible exception of not harming others (see the previous point).

So then, by undermining moral knowledge, scientism has provided the context for the contemporary view of freedom and, consequently, it has led to moral chaos. For example, in my view, the contemporary view of freedom makes it difficult to justify resistance to a wide range of immoral practices, such as the practice of adults having sex with minors, even with children. If this is what adults want to do to satisfy their desires, who are we to judge?

One could respond that this is wrong because children cannot give consent to sex with an adult. But, absent moral knowledge, who can say that consent is a morally relevant notion? Also, we don't get consent to give children vaccinations, and we force them to go to school, because these things are good for children. And, believe it or not, some contemporary groups are arguing that the idea that sex with adults harms children is an outdated, Victorian

Christian idea and, in fact, sex with adults is like vaccinating a child or forcing his or her schooling: It is healing, liberating, and so on. The point? By funding the shift from classic to contemporary freedom, scientism inevitably leads to moral bankruptcy.

Finally, scientism warrants a shift in how we think about and practice tolerance, again moving from a *classic* model to a *contemporary* one. According to the classical sense of the principle of tolerance, a person holds that his own moral views are true and are known by him to be such, and those of his opponent are false, but he still respects his opponent as a person and he respects his right to make a case for his views. Thus, someone has a duty to tolerate a different moral view, not in the sense of thinking it is morally correct, but, quite the opposite, in the sense that a person will continue to value and respect one's opponent, to treat him with dignity, to recognize his right to argue for and propagate his ideas, and so forth.

Strictly speaking, on the classic view, one tolerates persons, not their ideas. In this sense, even though someone disapproves of another's moral beliefs and practices, he or she will not inappropriately interfere with them. However, it is consistent with this view that a person would judge his opponent's views to be wrong and would dedicate himself to doing everything morally appropriate to counteract those views, e.g., using argument and persuasion.

Classic tolerance presupposed the reality of moral knowledge. For that reason, it cannot survive in a culture of scientism. And it is scientism that has led to the contemporary view of tolerance. The contemporary version of tolerance, popular in the general culture, goes beyond the classical version in claiming that one should not even judge that other people's viewpoints are wrong. Thus, the

very act of disagreeing morally with someone else is intolerant. Unfortunately, if scientism is correct, there is no moral truth or knowledge and, thus, no real *moral* disagreements in the first place.

This contemporary version of tolerance is deeply flawed for at least two reasons. First, it cannot be consistently asserted or lived out, because those who affirm it imply that others who do not share their view of tolerance are *wrong*. In other words, people who follow this new version of tolerance do not tolerate those whom they consider intolerant! Second, it silences the moral protest of evils such as child molestation, racism, and so on. Why? Before one can morally protest something, he or she must judge it to be wrong and not worthy of being tolerated. Such is the culture in which we now live, and we have scientism largely to thank for it.

3. Scientism Has Led to Increasing Hostility toward Christianity

If scientism is true, then it follows that Christianity is an outdated, bigoted superstition.

Robert B. Reich, former professor at Harvard University and Secretary of Labor in the Clinton administration, is happy to make the point explicit:

> The greatest conflict of the 21st century . . . will be between modern civilization and anti-modernists; between those who believe in the primacy of the individual and those who believe that human beings owe their allegiance and identity to a higher authority; between those who give priority to life in this world and those who believe that human life is mere preparation for an existence beyond life; *between those who believe in science, reason, and logic and those who believe that*

truth is revealed through Scripture and religious dogma."[2]

Reich understands that ideas matter, and he hopes that scientism destroys our confidence in Christianity.

4. Scientism Has Derailed the Church from Making Disciples and Has Made Christian Parenting Less Effective

There are several definitions of "the world" in Scripture: (1) the entire created order (e.g., Ps. 24:1); (2) the entire class of human persons (John 3:16); (3) that part of culture, especially non-Christian culture, that is contrary to the kingdom of God and Scripture (1 John 2:15–17). In every culture in which the church is present, God's people are to avoid particular manifestations of the world in that culture. However, to do this, it is not enough just to know Scripture; as Christians, we must also understand the systems of thought, practice, and value in our culture that are worldly, and be able to make this clear to fellow Christians and explain how to refute those ungodly systems using both biblical and nonbiblical evidence (cf. 2 Cor. 10:3–5).

Christians must be taught not only what they believe but why they ought to believe it. This will especially involve exposing and undermining scientism, and dealing with issues relating to science and the Bible. Obviously, with glorious exceptions, the local church is a complete failure in this regard. We practice "ostrich Christianity"—we put our heads in the sand and hope that scientism will just go away and leave us alone.

Unfortunately, our failure to address scientism and related issues is causing young people to leave the church. In an important interview in *Leadership Journal*, Barna Group president David Kinnaman lists six reasons young people

leave the church. Four are especially relevant to our current discussion: the church's shallowness of thought, including its biblical teachings and practices; the feeling that it is an unsafe place to express doubts and get answers to questions; its isolationism, that is, its failure to interact fairly with the surrounding culture; and, last but not least, the church's anti-science attitude, including being out of step with scientific developments and debate.[3]

Instead of equipping people to understand and meet the world head-on, giving solid reasons for its Christian beliefs, the church has become its own "gravedigger"—the very practices that cause its numbers to rise and its budgets to be met are making the church increasingly anemic and marginalized. What are those practices? We try to "grow the church" by using watered-down, intellectually vacuous, simplistic preaching that is always applied to a parishioner's private life while failing to deal from the pulpit with the broad cultural, intellectual, and moral issues facing us all; by emphasizing worship and good Christian music; and by trying to get people into small groups.

There is nothing wrong with the last two practices, but conspicuously absent is any place in weekly church practice for people to learn; for their minds to be stretched; for learning to defend their faith; for becoming godly, intelligent ambassadors for Christ. People lack the courage to stand up for their faith in a nondefensive, winsome way because they lack the requisite knowledge for doing so. Thus, when challenged, Christians get defensive. Knowledge gives authority and courage, and knowing how to respond to scientism should be one of the top priorities in this culture if we want to avoid getting drawn into the world's way of thinking.

Further, the very concept of "faith" has been redefined and has now replaced reason. Today, faith is choosing to

believe something in the absence of evidence or reasons for the choice. Faith used to mean a confidence or trust based on what one knows. Given the current definition, ubiquitous throughout the church, we Christians have unintentionally played right into the hands of advocates of scientism. By thinking of faith in this way, we are tacitly implying that we believe in the tenets of Christianity without any evidence or reasons at all.

Finally, by failing to help parents furnish their children with reasons for believing Christianity—especially reasons for rejecting scientism—the church has crippled Christian parenting. To see this, consider the following words by the great spiritual master and Christian activist William Wilberforce (1759–1833), who wrote about genuine Christianity and true spiritual growth. Whereas, today, a book about the spiritual life and the cultivation of spirituality in children would likely not be considered *apologetics* (the art of defending the faith), apologetics was at the forefront of Wilberforce's mind:

> In an age in which infidelity abounds, do we observe them [parents] carefully instructing their children in the principles of faith which they profess? Or do they furnish their children with arguments for the defense of that faith?
>
> They would blush on their child's birth to think him inadequate in any branch of knowledge or any skill pertaining to his station in life. He cultivates these skills with becoming diligence. But he is left to collect his religion as he may. The study of Christianity has formed no part of his education. His attachment to it—where any attachment to it exists at all—is too often not the preference of sober reason and conviction. Instead his attachment to Christianity is merely the result of early and groundless prepossession. He was born in a

> Christian country, so of course he is a Christian. His father was a member of the Church of England, so that is why he is, too.
>
> When religion is handed down among us by hereditary succession, it is not surprising to find youth of sense and spirit beginning to question the truth of the system in which they were brought up. And it is not surprising to see them abandon a position which they are unable to defend. Knowing Christianity chiefly by its difficulties and the impossibilities falsely imputed to it, they fall perhaps into the company of unbelievers.[4]

Clearly, Wilberforce was on to something, especially when we consider our scientistic culture's plausibility structure: *Training in apologetics is vital to perhaps all areas of Christian education and parenting. Failing here increases the odds that, when they leave the home, our children will leave Christianity.*

Like it or not, we can't just bury our heads in the sand regarding the power and pervasiveness of scientism in our culture. It *will* affect Christians negatively if the leaders of the church and parents are not equipped to recognize when scientism is being promoted in a movie, on television, or elsewhere, and to know how to provide a reasoned response to it. And that sort of equipping is exactly what this book is all about.

Before we see why scientism is false, let's step back and look at where it came from. A full analysis of that question would be impossible in a book like this, but we can at least look at one key venue for where these shifts took place: the American university. To that we now turn.

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1. Daniel Callahan, "Minimalist Ethics," *The Hastings Center Report* 11 (October 1981): 19–25.
2. Robert B. Reich, "Bush's God," *The American Prospect Online*, July 17, 2004, 40, my emphasis.
3. David Kinnaman, "Six Reasons Why Young People Leave the Church" (compiled by Eric Reed), *Leadership Journal* (Winter 2012), online at http://www.christianitytoday.com/le/2012/winter/youngleavechurch.html.

4. William Wilberforce, *Real Christianity* (Portland, OR: Multnomah, 1982; based on the American edition of 1829), 1–2.

3

How Scientism Changed the Universities

The ubiquity and cultural authority of scientism can be discouraging and corrosive to faithful Christians who are seeking to follow Christ, as it immerses them in a pervasive secularism.

No one has described the situation better than my late mentor and philosophy professor Dallas Willard, who taught philosophy at the University of Southern California from 1965 to 2013. About the American academy, he wrote,

> [T]he crushing weight of the secular outlook . . . permeates or pressures every thought we have today. Sometimes it even forces those who self-identify as Christian teachers to set aside Jesus' plain statements about the reality and total relevance of the kingdom of God and replace them with philosophical speculations whose only recommendation is their consistency with a "modern" [i.e., contemporary] mindset.
>
> The powerful though vague and unsubstantiated presumption is that *something has been found out* that renders a spiritual understanding of reality in the manner of Jesus simply foolish to those who are "in the know."[1]

Things have not always been this way in American universities. In 1884, Harvard University changed its official

seal to include two phrases: *Veritas* (Truth) and *Christo et Ecclesiae* (for Christ and Church). In *The Making of the Modern University*, Julie Reuben, who serves today as professor of the history of American education at Harvard, explains the significance of the seal:

> In 1884, Harvard officials assumed that the two phrases on their new seal were compatible. They had inherited a world view that strongly associated truth and religion. The term *truth* encompassed all "correct" knowledge; religious doctrines, common-sense beliefs, and scientific theories were all judged by the same cognitive standards.[2]

This view represented the views of most educated Americans at the time. Notice that, according to Reuben, religious, especially Christian, claims and commonsense notions were placed on an equal footing as sources of *knowledge* along with scientific theories! As I write this, it is a mere 133 years later. What in the world happened?

How Things Changed

Reuben details how, from 1880 to 1930, the American liberal arts college became the modern research university. Christians interested in how our culture has come to arrive at our current situation ought to read her book.

Reuben distinguishes between three overlapping time periods: the Religious Stage (1880–1910), the Scientific Stage (1900–1920), and the Humanities and Extracurricular Stage (1915–1930).

During the Religious Stage, colleges considered themselves to have two mandates: (1) imparting wisdom and knowledge, while teaching the skills needed to discern each; (2) developing students spiritually, morally, and politically so they might serve God, the state, and the church well. The purpose of college, in other words, was normative, and it required a certain form of material content: students should learn how to live well, and they could access knowledge to give content to what this should look like. The Christian God—a single, unified mind and the source of all truths—inspired curriculum that was also unified, so that every discipline shed light on and harmonized with all other disciplines. College faculty and administrators knew that all fields of study provided knowledge. Spiritual, ethical, aesthetic, and political truth and knowledge were considered real, along with truth and knowledge in the other disciplines, including science. Of essential importance were the acts of teaching, studying to gain the riches of knowledge, and cultivating spiritual and moral virtue.

Many factors caused the approach to knowledge in the university curriculum to change. For example, developing technology for industry and defense meant that the sciences became increasingly specialized. Over time, a

fact/value distinction came about, according to which truth and facts—or, in the sciences, empirical knowledge—became the *only* knowledge:

Fact/Value Distinction

Values	private subjective (a matter of personal opinion)

	culturally relative
Facts	public objective (independent of anyone’s opinion)

	obligatory for everyone

Table 3.1

Religious and ethical claims were soon understood to be merely private feelings and personal opinions. Religion and values could not provide knowledge; in fact, they were neither true nor false. The idea of a stable body of things that are knowable gave way to the idea that truth is always changing; that progress, not wisdom, is of most importance; and that colleges ought to emphasize “learning how to think” rather than imparting knowledge and wisdom, especially outside the empirical sciences.

Christian monotheism, having been expelled from the cognitive domain, could no longer justify a unified curriculum. Without one rational God to unify knowledge, justifying why one discipline should have anything at all to do with another discipline also became impossible. Thus, uni-versities became multi-versities, and ever since the 1930s we have lived with this fragmentation. Possessing a body of knowledge could not distinguish college graduates from nongraduates. Besides helping one get a job, the gifts of a college education became appreciating a “scientific attitude,” “thinking for oneself,” open inquiry, and an attitude of tolerance.

Natural and revealed theology became a “matter of faith.” Knowledge of God and related matters were tolerated as long as their supporters did not claim to actually have knowledge! Scientism won the day as the fact/value distinction prevailed. While acknowledging that religious and ethical domains may contain truth (but no one can know what that truth is), denying nonempirical knowledge turned into denying truth outside the empirical sciences.

Given these shifts—from a unified curriculum grounded in God, to a fragmented curriculum based only on the

empirical sciences; and from a cognitivist view where theological and ethical claims could be judged true or false, to a noncognitivist (or positivist) view where such claims were neither true nor false, but simply either meaningless or perhaps mere expressions of feelings—university presidents and administrators were left to navigate their way forward, so they sought to remove theology and ethics from the realm of knowledge. Let's remember what the original purposes of college education were. The first purpose was to acquire knowledge and to acquire the skills to obtain knowledge. In a modified form, this purpose was retained; the new goal, though not aimed at discovering truth, was to facilitate *useful* research within a framework of changing truth. This was easy to accomplish in the sciences, but the humanities were left, not with developing models about reality (e.g., the reality of language and how it works in English literature); instead, their mandate became to learn the various theories in their fields advanced by big names in those fields, compare them, and choose sides. And none of this work placed those in the humanities in touch with reality. After all, if only science can give us knowledge of reality, then the humanities must be involved in something of lesser importance.

The second purpose—to develop spiritually, morally, and politically virtuous graduates who could serve God, the state, and the church well—could not be modified, but had to be done away with entirely. Without knowledge beyond the sciences, this goal became impossible. For the sake of argument, let's forget about spirituality, God, and the church: even the development of morally and politically virtuous graduates who could serve their culture requires knowledge of a real body of moral truths—but the modern university did not believe in this anymore.

Perhaps, within the framework of the fact/value distinction and noncognitivist postures concerning religion and morality, universities did the best they could. Even so, their response seems rather pathetic. Because all fields of study once participated in religious and moral knowledge and training, this second goal had to be integrated into all undergraduate curricula. Along the way, however, scientists rid their fields of religious and ethical ideas; as a result, they no longer needed to teach students how to live well. The responsibility for moral and religious development, then, became solely the burden of the humanities. Professors of literature, art, history, language, and philosophy were all who were left to unify the meaning of students' lives and to teach values both for university life in general and for the curriculum in particular.

But humanities professors had also accepted noncognitivist attitudes of the nonempirical realms, so they, too, were forced to navigate these waters without any solid body of knowledge concerning values. The attempt, then, to teach character was inconsistent with the new founding values of the university: tolerance, academic freedom, a spirit of nondogmatic and free inquiry. Among humanities professors, a common vision of nonempirical knowledge disappeared, and all ethical and religious training was punted to extracurricular activities.

Universities hoped, then, to develop student character by developing extracurricular structures to nurture their sense of community and spiritual/moral values: (1) faculty advising would go beyond academic aid to include personal mentoring; (2) student participation in dorm life was increased in order to cultivate a sense of community where students could enrich each other spiritually and morally; (3) systems were put in place to facilitate spiritual and ethical community (for example, the office of dean of students

arose at Yale in 1919); (4) colleges instituted “freshman orientation” to socialize new students into the university community, orienting them to important spiritual and moral values. But these efforts failed because no one could agree on exactly what spiritual and moral values these programs should nurture. Furthermore, transferring moral and spiritual training from the classroom to extracurricular venues underscored the idea that religion and ethics were of a noncognitivist, nonfactual, and purely private nature.

The university’s second goal, then, imparting moral and spiritual knowledge, became the muddled goal of developing a rich student life. Scientism’s filling the atmosphere meant *morality* became *morale*; the college experience revolved around athletic teams and school spirit. The second goal, then, dissolved. The likes of Plato, Aristotle, Moses, Solomon, and Jesus were soon replaced with fight songs and football games.

Here is an important lesson from our brief study: The shift from the ideas that there are several ways of knowing and that theology, science, and other fields provide us with genuine knowledge, to the acceptance of scientism (that only science provides us with true knowledge) was not made on the basis of arguments, facts, or discoveries that laypeople just didn’t know about yet. Rather, it was merely a *pragmatic sociological shift*.

With this all-too-brief tour of cultural shifts, followed by the role of universities in particular, we are now in a position to look at the actual arguments in favor of scientism and to see how those arguments fall flat.

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1. Dallas Willard, *The Divine Conspiracy* (San Francisco: Harper, 1998), 92, cf. 75, 79, 134, 184–185, his emphasis.
2. Julie A. Reuben, *The Making of the Modern University* (Chicago: University of Chicago Press, 1996), 2, her emphasis. I have relied on Reuben’s insightful analysis for much of what follows in this chapter.

4

Scientism Is Self-Refuting

Years ago, when invited to speak at an evangelistic event, I was put on notice by a fellow Christian attending the event that he was bringing his boss, a man who had been a chief engineer for decades and was finishing a belated PhD in physics from Johns Hopkins University. He apparently went out of his way to ridicule Christians for their intellectual obtuseness.

Upon being introduced to me at the dessert table, the man wasted no time in making his views known and his condescension clear. “I understand you are a philosopher and theologian,” he said in a rather amused manner. Before I had a chance to respond, he said, “I used to be interested in those things when I was a teenager. But I have outgrown those interests. I know now that the only sort of knowledge of reality is that which can be and has been quantified and tested in the laboratory. If you can measure it and test it scientifically, you can know it. If not, the topic is nothing but private opinion and idle speculation!”

At the end of this chapter I’ll tell you how I responded, but at this point I want simply to point out that this gentleman was expressing what I have called *strong scientism*: the only knowledge or rationally justified beliefs we can have about reality are those that have been certified by (especially) the hard sciences.

I believe that strong scientism—the view that true knowledge is found only within science—is self-refuting. It is self-referentially incoherent, meaning that it refutes or defeats itself. Let me define the charge before I defend it.

What Makes a Statement Self-Refuting

Christians sometimes misunderstand the nature of this flawed form of argument and apply it wrongly. For example, someone might say, "There are no moral absolutes," and a Christian might incorrectly think he can refute the assertion by asking the rhetorical question, "Are you *absolutely* sure?" I'll explain below why this is a misguided response, but we first need to unpack what constitutes a self-refuting or self-defeating statement.

Such a statement has three features: (1) The claim establishes some requirement of acceptability for an assertion (such as having to be empirically verifiable). (2) The claim places itself in subjection to the requirement. (3) Then the claim falls short of satisfying the requirement of acceptability that the assertion itself stipulates. In other words, when a statement is included in its own subject matter (i.e., when it refers to itself) but fails to satisfy its own standards of acceptability, it is self-refuting.

Self-refuting statements can come in many forms. Take a look at these examples: "All sentences are exactly three words long."

- "I cannot utter a word of English" (spoken in English).
- "I do not exist."
- "This sentence is false."
- "Truths can only be verified by the five senses or by science."

If we look closely at these sentences, we will see how each satisfies the criteria for being self-refuting.

We must first be careful to make sure the statement refers to itself. The statement must be a part of its own subject matter. If asserted in French, for example, the statement “I cannot speak a word of English” is not self-refuting. More importantly, even though it is false, the statement “No moral absolutes exist” does not refute itself, because it is a philosophical assertion *about* morality, not a claim *of* morality (such as, “Do not commit adultery,” “Murder is wrong,” or “One ought to be tolerant of others”). “There are no moral absolutes” is not itself a moral absolute, just a denial that moral absolutes exist. Like a statement made in English about all French statements (for example, “No French statement is longer than three words”), “No moral absolutes exist” is merely false, not *self*-refuting, because it does not refer to itself.

Some statements, like “6 + 3 = 17,” could not possibly be true. It is a necessary falsehood, so even God could not make it true. Other statements, like “There are no cats,” only *happen* to be false, but these could have been true.

Here’s the key point to remember: self-refuting statements do not just *happen* to be false; instead, they are *necessarily* false. No amount of future research will show that these statements are true after all.

Why Strong Scientism Is Self-Refuting Given what we’ve said, you can see that it is impossible for the statement “There are no truths” to be true.

So, test your understanding: is the following statement of strong scientism self-refuting?

“Only what is testable by science can be true.”

Let’s check it against the three criteria we saw for a self-refuting statement.

1. **Does this statement establish a *requirement of acceptability*?**

Yes: it says that something must be testable to be true.

2. **Does this statement place itself in *subjection* to the requirement?**

Yes: it purports to convey truth.

3. **Does this statement *fall short* of satisfying its own requirement?**

Yes: this is a philosophical statement about science that cannot itself be tested by science.

So, not only is strong scientism false, but it is self-refuting. In addition, nothing will ever be discovered that can change this. No amount of future research or blockbuster discoveries can show that a self-refuting statement was true after all. Since the statement “Only what is testable by science can be true” will never itself be testable by science, a skeptic cannot respond by saying, “There may be no current evidence for its truth, but someday science will advance to the point of proving that it is true after all.” In other words, it is not only false and self-refuting, but it is *necessarily* so. No further scientific discoveries could make the statement true, so the skeptic’s response expresses a misunderstanding that the statement and others like it (see above) are necessarily false.

Scientism Is Philosophy, Not Science The irony is that strong scientism is a philosophical statement, expressing an epistemological viewpoint *about* science; it is not a statement

***of* science, like "water is H_2O" or "cats are mammals." Strong scientism is a philosophical assertion that claims that philosophical assertions are neither true nor can be known; only scientific assertions can be true and known.**

Christians, therefore, should not be intellectually intimidated when they hear very smart people with advanced degrees sitting in positions of authority say things that are self-refuting. In 1869, when Charles Eliot was elected president of Harvard Univeristy, he made the following claim in his inaugural address: "Philosophical subjects should never be taught with authority. They are not established sciences; they are full of disputed matters, and open questions, and bottomless speculation."[1] With the information in this chapter, you should now be equipped to understand and show others why President Eliot's assertion was philosophical and not scientific, and why it is therefore self-defeating.

Back to My Conversation with the Man Who Believed in Scientism and Mocked Christianity

At the beginning of this chapter I told about the man finishing his PhD in physics from Johns Hopkins, who came to an evangelistic event at which I was speaking. He had basically told me that when he was young and immature he was interested in things like reading philosophy, but he'd outgrown that now, knowing that the only sort of knowledge of reality is that which can be quantified and tested scientifically in the laboratory.

Well, I didn’t tell you the rest of the story: I let the gentleman speak for two or three minutes, and then I interrupted him with an expression of puzzlement: “Sir,” I said, “you have made thirty to forty assertions in the last few minutes, and as far as I can tell, not one of them can be quantified, measured, and scientifically tested in the laboratory. But this places me in an awkward position. By your own standards, all you have been doing in our conversation is spouting your private opinions and idle speculation. Given this, I am wondering why I or anyone else ought to give you the time of day or think a single thing you said is knowably true.”

The gentleman’s face turned red—obviously, no one had ever pointed this out to him—and he quickly changed the subject! It is an uncomfortable thing for someone to point out that you have just made a statement, which, if true, refutes the statement you just made. But that is precisely the predicament that those who believe in strong scientism find themselves in.

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1. Julie A. Reuben, *The Making of the Modern University* (Chicago: University of Chicago Press, 1996), 77.

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Scientism Is the Enemy of Science

Neither form of scientism—neither in its strong nor its weak version—adequately allows one to state and defend the necessary presuppositions that justify practicing science. In the previous chapter I highlighted one of the fundamental ironies of this discussion, namely that *scientism is not science but philosophy*. Now we can go a step further and say that *not only is scientism not science; it is not even a friend of science but rather its enemy*.

The Conclusions of Science Can Only Be as Strong as Its Presuppositions Science cannot be practiced in thin air; it is based on many assumptions, each with its challenges. And the business of stating, criticizing, and defending its assumptions is not scientific but philosophical.

Just as the structure of a building cannot be more reliable than the foundation on which it rests, so the *conclusions* of science (i.e., the structure) cannot be more certain than the *presuppositions* of science (i.e., its foundation). But strong scientism rules out these presuppositions altogether, because the nature of the presuppositions is philosophical,

just as defending the presuppositions is also a philosophical, not a scientific matter. In this way, then, scientism ends up loosening the foundations of science itself, jeopardizing the entire edifice.

Nearly forty years ago, the philosopher John Kekes made this point about science and philosophy as competing paradigms for rationaliy in a more technical way. Though written in paragraph form, I will break it out into numbered points to make it easier to track his argument: 1. A successful argument for the claim that science is the paradigm of rationality must be based on the demonstration that the presuppositions of science are preferable to other presuppositions.

2. That demonstration requires showing that science, relying on these presuppositions, is better than its competitors at solving some problems and achieving some ideals.

3. But showing that cannot be the task of science.

4. It is, in fact, one task of philosophy.

5. Thus the enterprise of justifying the presuppositions of science by showing that, with their help, science is the best way of solving certain problems and achieving some ideals, is a necessary precondition of the justification of science.

6. Hence philosophy, and not science, is a stronger candidate for being the paradigm of rationality.[1]

Shortly, I will list and discuss some of these presuppositions. I should say that not all scientists or philosophers of science agree with the entire list, and some do not think science rests on presuppositions (but few would be in this latter category). Most of the advocates of

scientism hold to a view of science that entails that science rests on most (if not all) of these assumptions.

I should also say that, while I will offer my own views about some of these assumptions, the issue before us is not which understanding of an assumption is correct (e.g., which view of truth does science presuppose?). The issues before us are these: (1) The *nature* and *content* of the presuppositions are not scientific; they are philosophical. So the task of stating and clarifying each assumption is a philosophical and not a scientific one. (2) The task of *defending*, *criticizing*, and *offering alternatives to* each presupposition is a philosophical one and not within the competence of science. (3) The task of even arguing whether or not science rests on assumptions or on some specific one is not a scientific one; it is philosophical.

Philosopher of science Del Ratzsch once wrote that "science cannot validate either scientific method itself or the presuppositions of that method." He takes as an example the principle of the uniformity of nature—roughly the idea that the future will resemble the past, or that unexamined cases of some phenomenon (e.g., undiscovered emeralds) will resemble examined cases (e.g., they will be green). Ratzsch notes that "this principle does not appear to be a *result* of science for the simple reason that it is a *presupposition* employed in generating results." He goes on to say, "Similar remarks apply to other foundational presuppositions of science."[2]

Is Ratzsch right? Let's look at some of these presuppositions of science. Remember that each one has been *rejected* by various scholars, even if it seems to be common sense. Thus, the need to *defend* these presuppositions—again, a philosophical and not a scientific endeavor—is no merely theoretical matter.

Presuppositions of Science That Science Itself Cannot Justify *1. A world exists "out there," independent of mind, language, or theory.*

Large swaths of the human family who subscribe to certain forms of Hinduism, Buddhism, and other Eastern religions take the "external world" to be a mere illusion. What may surprise you, though, is that many Western intellectuals reject the assumption of *metaphysical realism*—the view that there is an external, objective world that really exists, quite independently of humans thinking, speaking, referring to, or theorizing about it.

The late Harvard philosopher Hilary Putnam, for example, argued that we should replace metaphysical realism with *internal realism*—the view that the notion of "exists" or "doesn't exist" applies only within a theory and has no legitimate application to some alleged theory-independent "real" world.[3] The argument often goes like this: First, talking about *reality* itself is forbidden (maybe because the words used to refer to things, e.g., "electron," are used ambiguously); one talks instead about *reality assertions*, i.e., existence claims, reality-talk.

Second, one can argue that existence claims are true only in relation to a background theory or a "linguistic community." The statement "There are electrons" can be made in the context of a broader theory of atoms, protons, and so forth; the statement is given meaning by its role within atomic theory. An electron, for example, is something with a negative charge that attracts protons and circles the nucleus. A similar assertion, made relative to the Christian story, is "Jesus is the Son of God."

Third, alternative communities have incommensurable stories, without a common ground, so that rival narratives seem incomparable. Narratives and theories are imperialistic, so that everything is theory-dependent. From

this we can reason that existence claims are merely assertions in relation to their narratives.

Metanarratives, which are stories wherein objective reality is exhibited, do not exist, so advocates of these different conceptual schemes live in different worlds. Electrons might exist relative to atomic theory, but not relative to some alternative theory; the distinction between the existence and nonexistence of electrons makes sense only within a theory. What we are saying, then, when we speak of electrons, is that, while operating within the atomic theory of matter, we will speak *as if* electrons exist.

The internal realist, then, when asked if something *really* real exists outside a community's narrative, will say "really" is being used in a very unclear, abandoned, modernist way. So the question should be disallowed; it is inappropriate. Because there is no such thing as a "God's-eye" point of view, speaking of what is *really* real becomes nonsense.

2. The nature of the world is orderly, especially its "deep structure" that lies under and beyond the manifest world of ordinary perception.

Science must also presuppose an orderly universe. It would seem that there are at least three ways in which the universe exhibits an orderliness that is relevant to science: (1) in the ordinary world of trees, animals, planets, and so forth that contain objects large enough to see with the naked eye (this is sometimes called *the manifest image*—the world of daily life manifest to our unaided senses); (2) in the world's deep structure—the world of atoms, molecules, and so forth, that lies behind or under the manifest, ordinary world and to which appeal is made to provide a cause of and explanation for the ordinary world; and (3) in the startling fact that mathematics applies to either world in an orderly way. Let us unpack these in turn.

To begin with, phenomena in the ordinary world most often exhibit an order such that laws can be applied to them. So, for example, we know that, at constant volume, if the temperature of a gas increases, so does the pressure. This can be captured by the ideal gas law (PV=nRT) where P, V, and T are pressure, volume, and temperature in degrees Kelvin; n is the amount of gas one has in a container expressed in moles; and R is a constant. Or, the motion of the planets revolving around the sun exhibit an order that can be subsumed under Newton's laws of motion. And so forth. Such laws are indeed statements of the phenomena's uniformity: e.g., "Planets will *consistently* behave in such-and-such a way."

On the cover of philosopher of science Rom Harré's book *The Philosophies of Science*, there is a picture of an astronomer whose head is sticking out of a sphere-like boundary.[4] Inside the boundary is the manifest world of trees, hills, and the like. But with his head out of that world, he is peering into the deep-structured world of orderly mechanisms that are causally responsible for the manifest world being what it is. Regarding the deep structure, an example of this scientific order is that atoms and molecules combine according to strict laws of chemical change.

Finally, there is the assumption that we can fiddle with mathematics on a sheet of paper in our study without any regard to the world, and come up with mathematical formulas and equations that apply to and govern various phenomena in the manifest and deep-structured worlds. And, amazingly enough, this actually seems to work. As scientist Eugene Wigner exclaimed, "The miracle of the appropriateness of the language of mathematics for the formulation of the laws of physics is a wonderful gift which we neither understand nor deserve. We should be grateful

for it and hope that it will remain valid in future research. . . .”[5]

In the history of Western thought, these assumptions have not always been embraced. Indeed, it is widely acknowledged as a matter of fact that the Christian view of God, especially as depicted in the Protestant Reformation, provided an intellectual ground for the assumption that the world is orderly. As renowned historian of science John Hedley Brooke put it, The very possibility of a rational science of nature is usually considered to depend on a uniformity [i.e., order] in the relations between cause and effect. In the past, religious beliefs have served as a *presupposition* of the scientific enterprise insofar as they have underwritten that uniformity. Natural philosophers of the seventeenth century would present their work as the search for order in a universe regulated by an intelligent Creator. A created universe, unlike one that had always existed, was one in which the Creator had been free to exercise His will in devising the laws that nature should obey. A doctrine of creation could give coherence to scientific endeavor insofar as it implied a dependable order behind the flux of nature.”[6]

For centuries, people did not see the world as an orderly place. Indeed, the world was sometimes viewed as a sort of capricious living organism that could be coerced by magic. The most important point for our purposes is that *the existence of an orderly deep structure has not been evident to many people, including many contemporary scholars*.

For example, the great philosopher Immanuel Kant (1724–1804) believed the order in the world of our experience was due to our senses and mind imposing order on whatever world there was in itself. We could know nothing of the *noumenal* world (whatever is “out there” as it is in itself); we could know only the *phenomenal* world (the world as it is to

us)—whose many features, including its orderly nature, was a construction of the mind. Today, a number of scholars like the late neo-Kantian Hilary Putnam (cited in the previous point) claim that not only the reality of the "world," but also its features such as orderliness, are constructions of the knowing subject (or, perhaps, of one's community) and not features of Reality with a capital R.

It is typical these days to hold to a form of *linguistic relativity*, namely, the view that it is groups, cultures, or those who share a common language that carve up or construct the world and its order differently. In this way, different cultures literally live in different worlds with different principles of order. The late linguist Benjamin Lee Whorf (1897–1941)—whose thought is experiencing somewhat of a revival—put it this way: We dissect nature along lines laid down by our native language. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscope flux of impressions which has to be organized by our minds—and this means largely by the linguistic systems of our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way—an agreement that holds throughout our speech community and is codified in the patterns of our language.[7]

More recently, postmodern thinker Joseph Natoli has opined that "Cultures construct reality frames that we live in but since cultures are always concocting multiple and opposing stories of what is real, there is no one all-powerful reality frame. . . ."[8] If reality is constructed in different ways by different cultures, it follows that whatever order is present in one constructed "reality" most likely will not be present in another "reality." In any case, according to this

view, order is *not* a feature of the real, external world out there.

Once again, my purpose here is not to resolve this conflict or take sides. Rather, I am trying to show that a significant portion of the academic community rejects this assumption of science. And the content of this assumption of science, along with the arguments both for and against it, are philosophical and not scientific in nature.

3. Objective truth exists.

Objective truth is truth that we discover, not invent or construct. Like the external world, it is "out there" and accurately captures the world. Clearly, this is an assumption for most scientists and philosophers of science who espouse scientism. If "Electrons have negative charge" is taken to be objectively true, then obviously one has to assume there is such a thing as truth in the first place.

Not only is objective truth a presupposition of science (for most advocates of scientism), but its reality presupposes a certain understanding of truth, namely, the *correspondence theory of truth*. This is really just the commonsense view, first clarified in some detail by Aristotle, and it has been the predominant view throughout Western history. The correspondence theory of truth, put most simply, says a proposition is true if, and only if, it corresponds to reality. What the proposition asserts to be the case, in order to be true, actually *is* the case. More generally, truth obtains (or results) when a *truth bearer* (i.e., something bearing the claim that the world is a certain way, such as a proposition, statement, or belief) stands in an appropriate correspondence relation to a *truth maker* (i.e., that which is

actually real): The Correspondence Theory of Truth

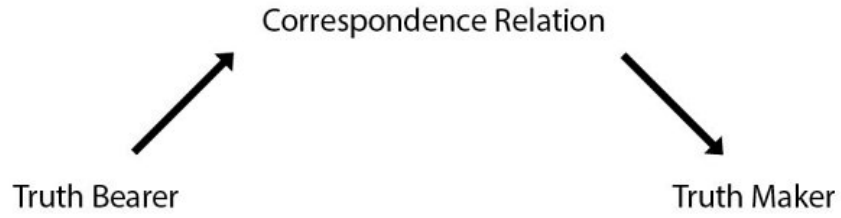

Fig. 5.1

A popular understanding of this diagram holds that the truth bearer is a *proposition*, not a sentence or piece of language (e.g., “Es regnet” and “It is raining” are radically different sentences that express the same proposition). The proposition has *intentionality*, that is, it possesses of-ness, about-ness, directed-ness toward an object. The proposition expressed by “Snow is white” has *snow* as its intentional object and it ascribes *being white* to that object. The truth “maker” is that part of reality that is the intentional object of the proposition, e.g., the state of affairs of snow’s being white would be the truth maker for the proposition *that snow is white*. Truth itself, according to this “correspondence theory of truth,” is the matching or correspondence relation between the proposition and its intentional object.

There are also alternative versions of truth (e.g., *the coherence theory*—a proposition is true if and only if it coheres well with other propositions; and *the pragmatic theory*—a proposition is true if and only if, in some sense, it “works”). And some have rejected the reality of absolute (i.e., objective) truth altogether, preferring some form of relativism instead.

For example, Christian thinker Philip Kenneson has written an article (amazingly enough) rejecting truth, including the correspondence theory. The article’s title is “There’s No Such Thing as Objective Truth, and It’s a Good Thing, Too.”[9] Again, the late philosopher Richard Rorty (1931–2007) proclaimed, To say that truth is not out there is simply to say

that where there are no sentences there is no truth, that sentences are elements of human language, and that human languages are human creations. Truth cannot be out there—cannot exist independently of the human mind—because sentences cannot so exist, or be out there. . . . Only descriptions . . . can be true and false.[10]

In sum, the existence and nature of objective truth have been matters of heated debate, and that debate is philosophical and not scientific. It is hard to think of what sort of science experiment could resolve the debate, especially if someone claimed that such an experiment did accomplish this feat, because the scientist conducting the experiment would have to be using a view of truth as a presupposition in the first place! And so this is yet another assumption that is in conflict with scientism (since scientism excludes truths that cannot be verified or justified by science).

4. Our sensory and cognitive faculties are reliable for gaining truth and knowledge of the world, and they are able to grasp the world's deep structure that lies beyond the sense-perceptible world.

Writing about Christian—especially Protestant—contributions to the scientific revolution in the seventeenth century, historian John Hedley Brooke notes, "A doctrine of creation could underwrite the scientific enterprise. . . . If the human mind had been created in such a way that it was matched to the intelligibility of nature, then the possibility of secure scientific knowledge could be affirmed."[11]

Christian philosopher Victor Reppert agrees: "the necessary conditions for rationality cannot exist in a [*scientistic*] naturalistic universe."[12] Reppert goes on to argue that the existence of human rationality provides evidence for theism as its best explanation.

However, it is not simply theists who acknowledge that human rationality is a problem for scientistic naturalism and can be explained by theism. According to naturalist Thomas Nagel, The problem then will be not how, if we engage in it, reason can be valid, but how, if it is universally valid, we can engage in it.

> There are not many candidates for an answer to this question. Probably the most popular nonsubjectivist answer nowadays is an evolutionary naturalism: We can reason in these ways because it is a consequence of a more primitive capacity of belief formation that had survival value during the period when the human brain was evolving. This explanation has always seemed to me laughably inadequate. . . .
>
> The other well-known answer is the religious one: The universe is intelligible to us because it and our minds were made for each other.[13]

A simple illustration may help get at part of what is being said. Suppose you were riding in a train, you glanced at a cliff as you rode past it, and you noticed, etched into the rock, the words GRANDVIEW — TEN MILES.

You would most likely believe the information conveyed by these words, because you would (rightly) assume they were designed and placed there by an intelligent person who wanted to alert folks to the next train stop.

But suppose you found out that the scribbling was actually made by years and years of erosion. With this new information, would you now believe the scribbling? Of course not. Why? You would not trust the alleged information communicated by the scribbling because it was formed by the unguided forces of nature. By the same token, we would have good reasons to trust the information we receive from our senses and cognitive faculties if they were designed by an Intelligent Person who did so in order

for us to gain knowledge of the world he created. But if we believed that blind, physical processes gave rise to our senses and cognitive faculties, we would have an undermining naturalistic story that would lead us not to trust our faculties.

The problem of justifying the assumption that we can trust our sensory and cognitive faculties becomes especially acute when we consider the combination of scientism and its creation myth, evolutionary naturalism.[14] Here's the basic problem: According to naturalistic evolution, all of an organism's parts, including its sensory and cognitive faculties (if they have such) are what they are because of one thing: they aided in feeding, reproducing, fighting, and fleeing. Our faculties, on this account, were selected for these survival-enhancing functions. The problem with this, however, is that an organism does not need accurate perceptions or true beliefs in order to survive.

It doesn't matter what perceptions or beliefs humans have as long as they are consistent and aid in the struggle for survival. As far as evolution is concerned, organisms are black boxes—that is, it doesn't matter what goes on inside the organism (e.g., what sensations or beliefs they have) as long as, given certain inputs, the bodily outputs get the organism's body in the right place at the right time to feed, flee, and so forth.

For example, even if an organism consistently perceived its large predators as small but these misperceptions caused the organism to flee for whatever reason (and alternatively, if it consistently saw small organisms as large and this caused them to preserve energy by not fleeing), these perceptions, though inaccurate, would be evolutionarily advantageous.

Similarly, if, every time Joe sees a tiger and forms the desire to hug the tiger and the belief that the best way to do

this is to flee and hide in the nearest cave, this belief/desire set would be as evolutionarily advantageous as forming the desire to get away from the tiger and the belief that hiding in a cave is the best way to get away. Evolution would be blind to the differences inside Joe as long as the right output is achieved. Truth is not needed for the survival-enhancing tasks of evolution; consistent error works just as well. Thus, evolutionary naturalism, certified by scientism, undercuts our confidence in our sensory and cognitive faculties!

But the difficulties with affirming evolutionary naturalism while also affirming the trustworthiness of our cognitive faculties is even worse than what we have already seen. And this difficulty has been acknowledged clearly by the naturalist Nagel.[15] In order for our faculties to aid us in surviving, they need to be apt for interacting with the sense-perceptible, manifest world of appearances. And, indeed, all organisms but human beings, says Nagel, are limited in their perceptions and cognitions to this world. But in order for science and certain other intellectual disciplines to be possible, we humans must be able to use our reason to go beyond our senses, reach into the world's deep structure, and grasp, formulate, and verify the theories we form about that deep structure.

Unfortunately, the relevant rational functions associated with these practices go far beyond what is needed to feed, reproduce, fight, and run away. Thus, there is, in principle, no evolutionary naturalistic explanation for this.[16] So, if we are limited to evolutionary naturalism, as advocates of scientism say we must be, then we have strong grounds for distrusting the employment of our reason in scientific practice. This, it would seem, puts the advocate of scientism in quite a pickle.

Again, while I agree with these arguments against scientism and evolutionary naturalism, that is not the

present point. The issue is, again, that *these are all philosophical claims, and the arguments for and against them are philosophical, not scientific*. Thus, once again we see that science cannot justify its own assumptions, and weak and strong scientism are accordingly false.

5. Various types of values and "oughts" exist.

There are at least three types of values that most scientists presuppose in their work: (1) *moral values* (e.g., one ought to record and report their data honestly and tell the truth about their experiments) such that if you violate them, you have done something immoral; (2) *rational values* (e.g., one ought to prefer a theory that is simpler, more empirically accurate, more predictively successful, has a wider scope of explanation than its rivals, etc.) such that if you violate them, you have done something irrational; and (3) *aesthetic values* (e.g., one ought to prefer a theory or equation that is more beautiful and elegant than alternatives) such that if you violate them, you have done something irrational and ugly.[17] At its best, science can tell us what *is* the case, but it cannot tell us what *ought* to be the case; it describes but cannot prescribe. Since they involve oughts that prescribe, these three types of values are assumptions of science that science cannot justify.

6. The laws of logic and mathematics exist.

Even though *science appeals to the laws of logic and mathematics and thus presupposes them, it cannot justify them*. Why? For one thing, logic and mathematics are *a priori* fields, that is, the relevant laws are warranted by direct rational awareness without any appeal whatever to sense experience. The sciences, however, are *a posteriori* disciplines that crucially justify their laws and theories by appeal to empirical observations.

For another thing, the truths of science are contingent. That means that, while they may be true, they could have been false. God could create possible worlds with very different laws of nature, e.g., gravity, and very different sorts of matter. Even the statement that water is necessarily H_2O (i.e., necessarily, water is H_2O) is not a necessary truth because there are possible worlds that God could have created that had no water. In such worlds, the statement “If there were water in those worlds, then there would be H_2O” would be true, but the statement “Water is H_2O” would be false, since the worlds have no water. But the truths of logic and mathematics are necessary truths (e.g., necessarily, 2+2=4; or, necessarily, if P, then Q; P; therefore, Q). Even God could not create a possible world in which these statements were false.

Conclusion

In all of this discussion, do not miss the forest for the trees. *The conclusions of science cannot be stronger than their presuppositions*. There are many things that science presupposes. But science itself cannot justify those presuppositions. It needs philosophy to do that. And therefore the philosophy of scientism—which is not itself science—ends up also being the enemy of science itself.

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1. See John Kekes, *The Nature of Philosophy* (Totowa, NJ: Rowman & Littlefield, 1980), 158.
2. Del Ratzsch, *Science and Its Limits*, 2nd ed. (Downers Grove, IL: InterVarsity Press, 2000), 93.
3. See especially Hilary Putnam, *Reason, Truth, and History* (Cambridge: Cambridge University Press, 1981). Putnam taught at Harvard, and a very similar commitment to a form of internal realism (for different reasons) was advocated by Harvard professor Nelson Goodman around the same time, in *Ways of Worldmaking* (Indianapolis: Hackett, 1978).
4. Rom Harré, *The Philosophies of Science*, 2nd ed. (Oxford: Oxford University Press, 1985).
5. Eugene Wigner, "The Unreasonable Effectiveness of Mathematics in the Natural Sciences," repr. in *The* World *of Physics, Vol. 3: The Evolutionary Cosmos and the Limits of Science*, ed. Jefferson Hane Weaver (New York: Simon & Schuster, 1987), 96.
6. John Hedley Brooke, *Science and Religion: Some Historical Perspectives* (Cambridge: Cambridge University Press, 1991), 19.
7. Benjamin Lee Whorf, "Science and Linguistics," *MIT Technology Review* 42 (1940): 229–231.
8. Joseph Natoli, *A Primer to Postmodernity* (Oxford: Blackwell, 1997), 13.
9. Philip D. Kenneson, "There's No Such Thing as Objective Truth, and It's a Good Thing, Too," in *Christian Apologetics in the Postmodern World*, ed. Timothy Philips and Dennis Okholm (Downers Grove, IL: InterVarsity Press, 1995), 155–172.
10. Richard Rorty, *Contingency, Irony, and Solidarity* (New York: Cambridge University Press, 1989), 4–5. Rorty's argument fails because it is concepts and propositions, not words or sentences, that are the real bearers of truth.
11. Brooke, *Science and Religion*, 19.
12. Victor Reppert, *C. S. Lewis's Dangerous Idea* (Downers Grove, IL: InterVarsity Press, 2003), 70, my emphasis.
13. Thomas Nagel, *The Last Word* (New York: Oxford University Press, 1997), 75.
14. This argument has been developed in different and powerful ways in C. S. Lewis, *Miracles* (New York: HarperCollins, 1947), chapters 2–4; Reppert, *C. S. Lewis's Dangerous Idea*; Alvin Plantinga, *Warrant and Proper Function* (New York: Oxford University Press, 1993), chapter 12.
15. Thomas Nagel, *Mind and Cosmos* (Oxford: Oxford University Press, 2012), 71–96.
16. Christian philosopher Robert Koons has argued that the hidden deep structure of the world is adequately described and explained by laws that are pervasive throughout science and that the rational value of simplicity (and, often, aesthetic beauty) pervasively characterize these laws and theories. Such a thing can hardly be an accident and, in fact, provides evidence for a God who created the world with this value-laden rational order to be capable of being discovered by us. See Robert C. Koons, "Epistemological Objections to Materialism," in *The Waning of Materialism*, ed. Robert C. Koons and George Bealer (Oxford: Oxford University Press, 2010), 281–306.
17. Regarding the role of aesthetic values in science, see Judith Wechsler, ed., *On Aesthetics in Science* (Cambridge, MA: MIT Press, 1981).

6

Why Weak Scientism Is No Better Than Strong Scientism

These days, if an accepted scientific claim comes into conflict with an accepted nonscientific claim from another discipline (such as theology), which claim must be set aside? In our culture, the scientific claim always wins. Why? Simply because it is scientific. Scientism seems so obvious and pervasive to people that it can be stated without any need to defend it. Appealing to science to back one's claim is a conversation stopper that settles the issue.

Weak Scientism Encourages Us to Look Only at the Authority of Science and Not to Examine the Actual Arguments

Weak scientism, as I explained in the first chapter, allows for truths apart from science and grants them some minimal rational status without scientific support. But weak scientism still implies that science is by far the most authoritative sector of human knowing. For example, Karl Giberson—theistic evolutionist, physicist, and active member of BioLogos—has said of science, "I would argue that it is the most epistemologically secure perspective we have."[1]

Clearly, weak scientism has infiltrated the church. Giberson is a Christian. But lest you think it is only scientists

within the church who hold to such an epistemology (view of knowledge), listen to the views of the late theologian Arthur Peacocke, who explicitly states that theology must be subservient to science:

> [T]here is a strong *prima facie* case for re-examining the claimed cognitive content of Christian theology in the light of the new knowledge derivable from the sciences. . . . If such an exercise is not continually undertaken theology will operate in a cultural ghetto quite cut off from most of those in Western cultures who have good grounds for thinking that science describes what is going on in the processes of the world at all levels. The turbulent history of the relation of science and theology bears witness to the impossibility of theology seeking a peaceful haven, protected from the sciences of its times, if it is going to be believable.[2]

Weak scientism, when believed and put into practice, leads to a constant revision of doctrines that the church has held for centuries under the pressure of scientistic political correctness. A well-known Christian philosopher recently noted that when scientists make claims that seem to conflict with biblical teaching and solid theology, theologians and biblical scholars (with notable exceptions) start ducking into foxholes, hoist the white flag of surrender, and trip over each other in the race to see who can be the first to come up with a revision of biblical teaching that placates the scientists.

Thus, the “dialogue” between science and theology or biblical exegesis is really a monologue, with theologians asking scientists what the latest discoveries allow them to teach:

Homosexuality is caused by our DNA?

No problem. The Bible doesn't teach the immorality of homosexuality anyway. We have misread it for two thousand years.

Neuroscience shows there is no soul?

No problem. Dualism and the soul are Greek ideas not found in the Bible, which is more Hebraic and holistic.

A completely naturalistic story of evolution is adequate to explain the origin and development of all life?

No problem. After all, the Bible isn't a science text.

Studies in the human genome suggested human life did not begin with Adam and Eve?

No problem. We can reread the historical narrative in a new way.

And on and on it goes.

In sum, the first problem with weak (and strong) scientism is that it diminishes the intellectual authority of other important fields, especially biblical studies and theology. This is not because the arguments are better, but simply because it is assumed that science by definition has more plausibility and inherent authority.

Tom Sorell notes that, according to scientism, "it is always good for subjects that do not belong to science to be placed on a scientific footing." Science has a duty to enter into nonscientific fields because (as we quoted Sorell in chapter 1) "the scientific is much more valuable than the non-scientific, or the thought that the non-scientific is of negligible value."[3] From this perspective, therefore, when science is extended into other fields, its superior cognitive authority means that science must correct many of the nonscientific views and discoveries of that field, or at least

shed new and important light on those fields that people could not see without science.

With this in mind, in this chapter I will briefly revisit the assumptions of science in light of weak scientism, and show why even a weak form of scientism should be rejected. Then in the next two chapters I will provide examples of claims from nonscientific fields that we know with greater certainty than many, perhaps all, of the claims of science. Then I'll show you what all of this looks like in practice, examining an important area of study that is distorted by those who try to invade it with science and an attitude of scientism.

Why We Should Reject Weak Scientism

As I have already pointed out, science cannot be practiced in thin air: (1) it depends on many assumptions; (2) each assumption (presupposition) has been challenged; and (3) the task of stating, criticizing, and defending these assumptions is a philosophical one.

Strong scientism rules out these presuppositions altogether because neither the nature/semantic content of the presuppositions themselves nor their defense or rejection are scientific matters.

But weak scientism does not get off the hook here just because it allows for some minimal justification for nonscientific claims while retaining the cognitive superiority of scientific assertions. Why? As I explained in the previous chapter, *the conclusions of science cannot be more certain than the presuppositions on which those conclusions rest*. For example, many would claim that the statement "Electrons have negative charge" is really true because it matches reality—the way electrons really are. But it is obvious that this assertion presupposes truth, and a particular theory of truth at that: some version of the correspondence theory. It should be clear that, to the degree

that we have reason to doubt the correspondence theory of truth, we have even greater reasons for doubting the statement about electrons.

This observation leads to our first lesson derived from getting clear on weak scientism: Advocates of weak scientism are confused about the relative cognitive strength of *an assumption* and *a claim that is based on that assumption*. Weak scientism believes that a *claim* based on an assumption has greater warrant than the strength of the *assumption* itself. In reality, though, the claim is only as good as the assumption upon which it rests. And because the assumptions are not scientific assumptions, but rather philosophical assumptions, philosophy has a kind of primacy over science. Therefore, weak scientism's claim that science always takes precedence over other disciplines is false.

Here is a second lesson: Advocates of weak scientism underestimate the rational strength of many of the assumptions of science, and as a result, they do not give those assumptions the cognitive authority they deserve. Remember the following assumptions of science: (1) the existence of objective truth that has something to do with matching reality; (2) the general reliability of our sensory and cognitive faculties; and (3) the basic laws of logic and mathematics. Each of these assumptions seems to have a cognitive authority that is virtually unmatched. Indeed, it would seem *self-refuting* to deny any of these assumptions (except for the truthfulness of the basic laws of mathematics, in which case the denial is false, but not self-refuting). I leave it to the reader to discover the self-refuting nature of a denial of the other two assumptions of science. Keep in mind that in order for anyone to present reasons for denying one of these assumptions, they most likely will have to use the very thing they deny in order to support those reasons.

Which View Makes Better Sense of Reality?

The nature of the assumptions of science do not *prove* the existence of a God very much like the God of the Bible, but in my view, they provide reasons for preferring theism over scientistic naturalism. The assumptions are at home in a theistic worldview; they fit quite naturally. If God is himself a rational being, then it stands to reason that he would create a rational, orderly universe. If he created us, then it naturally follows that he would give us the proper faculties to know and appreciate the inner workings of his world by "thinking his thoughts after him." The existence of objective values makes far more sense if there is an objective Lawgiver than if there is not.

If we begin with "In the beginning, there was the Logos," then we have reasonable explanations for these assumptions. But if we begin with "In the beginning were the particles (or plasma, strings, etc.)," it is hard to see how these assumptions could have obtained. And as we saw above, certain naturalistic commitments—e.g., naturalistic evolutionary theory—actually undermine crucial assumptions of science such as the trustworthiness of our faculties for obtaining truth about the world's deep structure.

For at least these reasons, I think the rational person must reject weak scientism.

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1. Karl Giberson, "Intelligent Design on Trial—A Review Essay," *Christian Scholar's Review* (May 1995): 469. The BioLogos Foundation is the leading advocate of theistic evolution in America.
2. Arthur Peacocke, *Theology for a Scientific Age* (Minneapolis: Fortress, 1993), 6–7.
3. Tom Sorell, *Scientism* (London: Routledge, 1991), 3, 9.

7

The Availability of Nonscientific Knowledge

Scientism claims that it has cognitive superiority over all other fields of knowledge and study. But what if there are things that we can know with greater certainty, and in different ways, than we know the claims of the hard sciences?

In this chapter, I want to briefly think with you about logic and math, our personal conscious states, and the moral law to show you why the emperor of scientism truly has no clothes.

Logic and Math I have already mentioned the importance of the laws of logic and of basic mathematics. But what is it about these areas of knowledge that set them above science? They have two characteristics that are worth noting.

First, the laws of logic and basic mathematics are known in an *a priori* manner, by direct rational intuition or awareness, without appealing to sense experience to justify them. One can just "rationally see" that the basic laws of logic and math are true. And just like a doctor, a trained logician or mathematician is able to "rationally see" more

when looking at a chain of logical or mathematical reasoning than is an untrained layperson. His intuitive awareness stretches beyond that of those who are untrained.

By contrast, the theories and laws of science are, in one way or another, known in an *a posteriori* fashion, eventually requiring an appeal to observation and sense experience. And for any set of observational data, there is always more than one law or theory consistent with those data. This does not mean that, in such cases, there is no law or theory that is superior to its rivals. But that claim must be made by appealing to cognitive values like simplicity, empirical accuracy, predictive success, scope of explanatory power, and so forth.

And sometimes, if there are two rival theories, advocates of one theory may elevate one value (e.g., simplicity) while the advocates of the rival theory elevate another value (e.g., scope of explanatory power). When this happens, it often becomes hard to know which theory is the best one. It is generally (though not universally) agreed that greater rational certainty is available for *a priori* truths than for *a posteriori* truths.

The second characteristic of truths in logic and mathematics is that if they are true, they are *necessary truths*. It is impossible for them to be false. Even God could not create a world in which 2 + 2 = 57.68. God could not create a world in which something is both true and false at the same time in the same way (e.g., it is raining and not raining at a specific location and time).

By contrast, scientific truths are *contingent*. Even if a scientific principle is true, it *could* have been false. It is possible, for example, to imagine a world with different laws of nature, like a world with a different law of gravity, or a world with no gravity at all; a world with a different type of

matter, or a world with no matter at all (e.g., a world with only angels in it).

Someone might object that the law stating that "water is H_2O" is a necessary truth. However, this is not quite correct. To be sure, any possible world that has in it what amounts to water in our world necessarily has H_2O in it. But unlike the truths of logic and basic mathematics, there could easily be worlds without any water in them at all. In those worlds, the statement "water is H_2O" is false because there is no such thing as water in those worlds like water is in our world. The conditional statement "If there were water in these worlds, there would be H_2O" would be true, but the basic assertion that, in those worlds, "water is H_2O," would be false.

Our Personal Conscious States In addition to the laws of logic and mathematics, we have greater rational authority about what is happening inside our own conscious lives than any other person does. How do we know our own conscious states? Not by any scientific, empirical means but by direct introspection.

Issues surrounding consciousness and the soul are so important in light of weak or strong scientism that I will devote more attention to scientism and consciousness in the next chapter. But for now, let us stick with the *epistemic authority*—that is, the rational cognitive authority—that each of us has regarding our own conscious states.

Assume for a moment that I am focusing on my inner life and not daydreaming. In this state, I am in a position to know what is happening in my own mental life with greater epistemic certainty than other people have in knowing what is in my conscious life. A neuroscientist could know with greater certainty what is happening in my *brain*, but he

cannot know with greater certainty what is going on in my own *mind*.

One might think that the day will come in which scientists have so precisely correlated mental and brain states that a scientist could, indeed, know better than I what is going on in my mental life by simply reading my brain states. But this is not true. Why? In order for scientists to develop a detailed chart correlating specific mental and physical states, he must ask his experimental subjects what is going on inside them as he reads the brain monitor. For example, if he observes rapid eye movement in a sleeping subject and monitors what is happening in the brain, he must still awaken the subject and ask what is happening in his or her consciousness (the person is dreaming). Thus, any correlation chart will be epistemically dependent on and weaker than a subject's own introspective knowledge of his conscious states, because the chart is dependent upon the accuracy of experimental subjects' reports of their own consciousness.

Relatedly, consciousness exhibits *private access*. Take any physical entity whatsoever—a rock, an organic chemical, or a state of the brain: Any way *you* have of knowing things about that physical entity (e.g., its size, shape, mass) is also available to *me*. If you need to measure it to know its length, then I can do that too. But I have a way of knowing about my own conscious states that is not available to you: direct introspection. As Thomas Nagel and others have pointed out, we could know everything there was to know about the physical aspects of a bat, but we would still have no clue as to the facts about what-it-is-like to be a bat. These facts are privately accessible only to the bat.[1]

If all of this is so, then I have greater epistemic authority for knowledge of my own conscious states than I can ever have of the laws of nature and science.

Moral Knowledge You may recall from chapter 1 that, during my nine-day stay in the hospital after colon cancer surgery, I got into a conversation with one of my nurses who had absorbed weak scientism without knowing it, and I told her we had more evidence that God exists than that electrons exist. I promised to revisit that incident, and now is the time to do so.

I do not have space to cover the strength and nature of the lines of evidence for God. That has been done elsewhere.[2] The point here is that the strongest arguments for God appeal to stable features of the universe—beauty; order; complexity; the fact that it had a beginning and something had to cause it; the existence of objective moral law; and so forth. They also appeal to reliable philosophical arguments based on these features that are, at once, commonsensical but also capable of being stated in a very sophisticated manner.

Now it is not hard to imagine that in fifty or a hundred years, most people in the West will not believe in God. But it is very hard to imagine what we could learn that would make it *irrational* to believe in God in fifty or a hundred years, or what evidence we might gain that would overturn these long-standing, stable arguments for God.

Consider the following item of moral knowledge: *It is wrong to torture babies for the fun of it.*
If someone claims he doesn't know that this is true, he needs therapy, not an argument! It is self-evidently and intuitively obvious. In fact, one can know it is true without needing to know *how* one knows it is true.

It is possible to imagine that, in fifty or a hundred years from now, most people will no longer believe this truth. But

it is hard to see what evidence, arguments, or other rational considerations could be discovered in that time frame that would make it a completely irrational belief to hold.

Now, is the same thing true of beliefs about electrons? Not at all—as the history of our understanding of the electron demonstrates.[3]

Consider the different views on electrons held by J. J. Thomson (1856–1940), Niels Bohr (1885–1962), and contemporary quantum physicists.

Thomson, an English physicist who won the Nobel Prize in Physics and is credited with discovering and identifying the electron, held that electrons were non-orbiting, negatively charged particles embedded in an atom much like raisins are embedded in plum pudding. He favored the view that the force an electron exerted on another object was to be viewed as some sort of fluid in the ether (a view that presupposed absolute space and time). According to Thomson, the entire mass of an atom was due to electrons (e.g., he thought an atom of hydrogen had 1,836 electrons).

Bohr, a Danish physicist who also won the Nobel Prize in Physics and made important observations about quantum theory and atomic structure, disagreed with Thomson. Rather than viewing electrons as non-orbiting, he argued that they orbit but only in discrete, specific circular orbitals at specific energy levels. Electrons, according to Bohr, can jump from one energy level to another, but they have no location (or at least no definable location) in the space between orbitals involved in such a jump.

The current model of the electron is part of modern quantum theory. One interesting feature of current quantum theory is whether or not the constituents of the universe, including electrons, should be taken as physical or as nonphysical, according to some form of metaphysical idealism.

Now, when I asked the nurse if she believed in electrons, my question was intentionally ambiguous. I should have specified which electron I was asking about. We no longer believe that “Thomsonian electrons” exist. While features of “Bohr’s electrons” have been retained in current theory, it is a legitimate question as to whether or not there ever were any such things as Bohr electrons, given what we now take electrons to actually be. Does current theory refine or replace Bohr’s theory? At the present time, it is difficult to say.

Why do I take you through this mini crash course on the history of the electron? Because of this key point I am trying to make: *Over time, as the science of a particular area moves on, it is often the case that older views of some entity are abandoned and, in light of current theory, scientists no longer believe there ever were such things.*

The history and theory of the electron is hardly an isolated example. Wikipedia has an entire page devoted to “Superseded Scientific Theories,” ranging across the disciplines of biology, chemistry, physics, astronomy and cosmology, geography and climate, geology, psychology, etc.

But, then, is it hard to imagine that, in fifty or a hundred years from now, no one will any longer think it rational to believe in electrons as they are currently depicted? Given science’s track record for abandoning old theories and the alleged entities that populated them, it is not at all hard to imagine such a situation. Thus, the strength of one’s belief in the quantum electron should be appropriately curtailed.

A second reason for being somewhat tentative about belief in electrons derives from the debate between realism and antirealism in science.[4] Very roughly, *scientific realism* holds that the entities that populate our successful theories (e.g., electrons in current views of matter and the atom) are

real and that the theories' descriptions of those entities are true or approximately true. By "successful" is meant that the theories are (1) empirically accurate (they match the relevant observations regarding the theory), (2) predictively successful, and (3) able to explain the relevant phenomena in a coherent way. Indeed, for the realist, the reason the theory is successful in the first place is that it accurately lays hold of the theory-independent world. For the realist, a successful theory has ontological implications, e.g., there really are such things as electrons and we currently have at least approximately true descriptions of them.

By contrast, in one way or another, the various versions of *anti-realism* claim that a successful theory is just that—merely successful—and the success of a theory has no implications whatsoever for the ontology (reality) of the unobservable entities under consideration. Thus, even though electron theory is successful, that does not mean that electrons actually exist.[5]

As evidence for their view, antirealists cite several theories in the history of science that were successful for a long time but that we now believe were false. They also cite several theories that scientific realists now believe were true but, unfortunately, were quite unsuccessful compared to their rivals for long periods of time. In other words, being "successful" is neither a necessary nor a sufficient reason to justify believing in the ontological implications of a theory.

But why are theories ever successful if it is not because they are capturing some aspect of reality? The antirealist says that the success of scientific theories is just what scientists do. They keep adjusting and fiddling with theories until they match observations and make the right predictions.

It doesn't seem to me to matter whether or not one is a realist or an antirealist for the point I am trying to make.

That point is this: It is important for the lay community to know that (1) there is this realist/antirealist debate, (2) there are intelligent advocates of both sides, and (3) even if one opts for realism, the mere presence of sophisticated versions of antirealism would seem to require a realist to temper his or her certainty about the reality of the entities (e.g., electrons) that populate currently successful theories.

For these two reasons—(1) the history of theory abandonment, replacement, and change in science; and (2) the presence of robust versions of antirealism—the reality claims of science are often (though, perhaps, not always) much less certain than the public, and especially the advocates of scientism, realize.

By contrast, the case for God and for certain ethical claims is strong, indeed, and it is not foolish to think that our legitimate degree of rational warrant for believing in God and certain ethical claims is greater than what we have for many assertions of science, despite what scientism advocates claim.

Conclusion To summarize, then, we have seen, first, that the laws of logic and mathematics have greater rational certainty than the claims of science, because the former are *a priori*, necessary truths, while the latter are *a posteriori*, contingent truths. Second, we have seen that no matter what neurological advances and technologies are made in the future, we will always have greater epistemic authority for knowledge of our own conscious states than we can ever have of the laws of nature and science. Third, we have seen the greater epistemic weight for self-evident moral

claims than we have even for the existence of something like the electron. These points individually, but especially collectively, show that the claims of scientism are simply false.

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1. Thomas Nagel, "What It Is Like to Be a Bat," *The Philosophical Review* 83, no. 4 (October 1974): 435–450.
2. J. P. Moreland, *The God Question* (Eugene, OR: Harvest, 2009); William Lane Craig, *Reasonable Faith: Christian Truth and Apologetics*, 3rd ed. (Wheaton, IL: Crossway, 2008). For a very advanced treatment of these arguments, see William Lane Craig and J. P. Moreland, eds., *The Blackwell Companion to Natural Theology* (Malden, MA: Wiley-Blackwell, 2009).
3. For a brief treatment of this history, along with other resources, see J. P. Moreland, *Christianity and the Nature of Science* (Grand Rapids, MI: Baker, 1989), 162–165.
4. Still relevant and fairly detailed on this topic is Moreland, *Christianity and the Nature of Science*, chapters 4 and 5.
5. For an up-to-date, but somewhat technical discussion of some of these issues, see Bastiaan C. van Fraassen, "Naturalism in Epistemology," in *Scientism: The New Orthodoxy*, ed. Richard M. Williams and Daniel N. Robinson (London: Bloomsbury, 2015), 63–95.

8

When Science Exceeds Its Reach: A Case Study

The study of human consciousness is an excellent example of what happens when the hard sciences intrude into another field where they don't belong.

The primary academic disciplines suited to studying the nature of consciousness (and the self, for that matter) are biblical studies, theology, and philosophy of mind. While the *origin* of consciousness is currently at the center of a storm, the *nature* of consciousness is actually pretty commonsensical. Let's take a brief tour of the subject before seeing how scientism distorts it.

What Is Consciousness?

Suppose you are in the recovery room immediately after surgery. You are still deeply under anesthesia. Suddenly and somewhat faintly, you begin to hear sounds. It is not long until you can distinguish two different voices. You begin to feel a dull throb in your ankle. The smell of rubbing alcohol wafts past your nose. You remember a childhood accident with the same smell. You feel an aversion toward it. You feel thirsty and desire a drink. As you open your eyes to see a white ceiling above, you begin to think about getting out of the hospital. What is going on? The answer is simple: You are regaining consciousness.

Note two things about this example.

First, whereas a description of a *physical object* (state, process, property, relation) must be completely relayed from within a third-person perspective, using commonsense language (e.g., being solid, large, located near the door, at rest) or the language of the hard sciences (has negative charge, has mass, is a neuron, is a synapse, is a calcium ion), descriptions of a *state of consciousness* require an approach from within the first-person point of view, and the nature of these states cannot be captured using physical language. How do you know what consciousness is and what its various states are? You know this by *having* those states (e.g., being in pain) and by simply attending to them through first-person introspection. Physical objects are publicly and equally accessible to all of us, and we must use third-person descriptions to capture their nature. But states of consciousness are privately available, being directly and privately accessible only to the person who is experiencing those states.

Second, states of consciousness are best defined ostensively, i.e., by citing or pointing to specific examples. In fact, a fairly good characterization of consciousness is this: *consciousness is what you are aware of when you engage in first-person introspection*. Both of these observations are exactly what the dualist approach to consciousness would predict. (Dualists believe that consciousness and the soul are immaterial, different from the body and brain.) At least five kinds of conscious states exist: A *sensation* is a state of awareness or sentience, e.g., a conscious awareness of sound or pain. Some sensations are experiences of things outside of us (such as a tree or the color red). Other sensations are awarenesses of states within us (like pains). Emotions are a subclass of sensations

and, as such, they are forms of awareness of things. E.g., I can be aware of something in an angry way.

A *thought* is a mental, semantic content that can be expressed in an entire sentence. “Es regnet” and “It is raining” are radically different sentences that express the same thought or semantic/propositional content. Some thoughts logically imply other thoughts. For example, “All dogs are mammals” entails “This dog is a mammal.” If the former is true, the latter must be true. Some thoughts don’t entail, but merely provide evidence for, other thoughts. For example, certain thoughts about evidence in a court case provide grounds for the thought that a person is guilty. Thoughts are the sorts of things that can be true or false, reasonable or unreasonable.

A *belief* is a person’s view—constituted by semantic content (e.g., that it is raining), accepted to varying degrees of strength—of how things really are.

A *desire* is a certain felt inclination to do, have, or experience—or avoid—certain things.

An *act of will* is a choice, an exercise of power, an endeavoring to act, usually for the sake of some purpose.

Five Kinds of Conscious States

sensation	a state of awareness or sentience
thought	a mental, semantic content that can be expressed in a sentence
belief	a person’s view (accepted to varying degrees of strength) of how things really are
desire	a certain felt inclination to do, have, or experience certain things or to avoid them
act of will	a choice, exercise of power, or endeavoring to act, usually for the sake of some purpose

Table 8.1

Property Dualism and the Case for the Immaterial Nature of Consciousness Are

properties such as being in pain, or having a thought, and the states/events composed of them (a specific pain or thinking event) genuinely mental, or are they physical? What is their real nature? *Property dualism* is the view that conscious properties/events are mental and not physical.

Before we proceed, we need to take note of *the law of identity*, a sophisticated way of making a common, everyday point:

> If x is identical to (is the same thing as) y, then whatever is true of x is true of y, and whatever is true of y is true of x.

Take a look at the following pairs:

X		**Y**
Barry Correy	is	the president of Biola University in 2018
The color of the sky	is	my wife's favorite color
the event of heating a fluid on the stove at noon	is	the event of my granddaughter fixing tea at noon

Table 8.2

Whatever is true of one of the columns will be true of the other because there are not two things present, just one, and we use two different words or phrases to refer to that one thing. If we can find one thing true or possibly true of x that is not true or possibly not true of y, they are not the same thing, even if one of the two depends on the other for its functioning.

Remember: It is one thing to ask, *What is a specific state of consciousness?*

What kind of properties characterize it?

It is another thing altogether to ask, *What causes a specific conscious state?*

What must be happening before that state can obtain and function in one's life and behavior?

As we shall see, neuroscience is very bad at answering the first two questions, but is very helpful with regard to the last two.

Five Reasons Why Mental States Are Not Physical

Property dualists argue that mental states are in no sense physical, since they possess five features that do not characterize physical states: (1) There is a raw, qualitative feel, a "what-it-is-like," to having a mental state such as a pain, a desire, or a thought. But there is no "what-it-is-like" feel to having mass, negative charge, or being an electron.

(2) At least many mental states have intentionality—*ofness* or *aboutness*—directed toward an object: a sensation is *of* the lamp, a belief is *about* London, a desire is *for* ice cream. But brain states, such as a group of neurons firing together, just happen by being caused by stimuli. They are not *of* or *about* anything. They just are.

(3) Mental states are inner, private, and immediate to the subject having them; the conscious subject has a way of knowing his mental states (through introspection) that is not available to others, and he has rational authority with respect to them. None of this is true of any physical object (e.g., the brain) or of any physical state of a physical object (e.g., a certain firing pattern in the brain). These are not inner (except spatially) or private (a brain surgeon could

know about your brain states), and the subject has no rational authority regarding, say, his brain states (the scientist could know more about them than the conscious subject does).

(4) Mental states require a subjective ontology—that is, mental states are necessarily owned by the first-person sentient subjects who have them. There is no such thing as a thought without a thinker to have it. But physical states (e.g., brain states) have no owner in this sense at all. For example, it is easy to conceive of God creating completely unconscious zombies with no owner-selves and no consciousness, but for which their brains work exactly like ours do. This provides evidence that brain states that go on all the time within our brains could happen without these states belonging to a self, an I, an ego, a soul. And these brain states could happen in a zombie world with no consciousness at all. In general, if something is coherently conceivable—i.e., we can conceive of it happening without containing a contradiction—then that is good evidence that what we are conceiving to be possible actually is possible.

In my view, *coherent conceivability* is the very best evidence for something being possible. But, then, we have evidence for the claim that brain states do not necessarily have owners—indeed, I don't think they *could ever* happen within a subject—and brain states can occur without conscious states occurring as they do in us. But mental states necessarily have an owner, a self that has them. Since something is true of mental states that is not true of physical states, they aren't the same thing.

(5) Mental states fail to have crucial features (e.g., spatial extension, location, being a structural property composed of parts, like the state of being a neuron) that characterize physical states and, in general, mental states cannot be described using physical language. One's thought of lunch

has no geometrical properties at all (no size, shape, spatial location). A pain is a simple qualitative feeling of hurt; it is not a structural property built out of millions of neurons firing in the right structure as is the brain property being a C-fiber firing that is correlated with the pain.

The Intrusion of Neuroscience Note very carefully that these five things we know about mental or conscious states and mental properties are items we know quite independently of neuroscience. People have known these things for a long time, and they are known, not by empirical tests or measurements, but by simple introspection. Simple introspection—combined with biblical, theological, and philosophical reflection—is the most rational and very best way to learn facts about the *nonphysical nature of mental properties and mental/conscious states.*

But the intrusion of neuroscience into philosophy of mind and commonsense reflection has, in my view, distorted the nature of our view of *mental* states and properties by rendering them in one way or another to be *physical* states and properties. Motivated by scientism (specifically, strong empiricism), *philosophical behaviorism*, for example, identified conscious states with body movements! This was a ridiculous view because, among other things, pain is inside us and *causes* body movements; pain is not a body movement itself. Still, for the behaviorist, being in pain is the same thing as moving the body by, say, grimacing and shouting, “Ouch!”

Another example: What was called the *type identity theory* claimed that mental properties (e.g., being in pain)

were identical to physical properties (e.g., having C-fibers firing). But, again, this was ridiculous. Pain is a simple quality known only by first-person introspection. C-fiber firing is a structural, quantifiable property made up of billions of cells called neurons that have electrical sparks in a certain place at a certain time, namely, sparking across a gap called a synapse.

Further, if pain is the same thing as C-fiber firing, then any organism without C-fibers firing as they do in humans could not be in pain. But various possible creatures that God could have made (e.g., creatures that were not carbon based but were silicon based and thus could not have C-fiber firings and, therefore, could not be in pain) but that he did not make (e.g., Martians) could all be in pain (that is, could have a hurtful feeling) without having any C-fibers at all.

The most popular physicalist theory today is *functionalism*, which says consciousness is what the brain *does* rather than something the brain (or, better, the soul) *has*. Consider a pain: In my view, the nature of the pain is that it is the occurrence of a feeling of hurt. The role the pain plays in our lives is that it is caused, typically, by pin pricks, hitting one's knee on a table, and so forth, and it causes us to shout, "Ouch!," rub our knee, and desire to be comforted.

Now, what a pain *is* (a feeling of hurt) is different from what having a pain *does* or what a pain causes. And the former is far more central to the identity of a pain than the latter. But functionalists claim that what a person experiences when he has a pain, even if he has no experience at all, is irrelevant to his being in pain if he is stuck with a pin, shouts "Ouch!," and desires comfort.

In sum, the commonsense dualist view of mental states such as pains holds that their essential nature is the intrinsic character of the mental state—e.g., being hurtful. Mental

states are immaterial. But the functionalist view disregards the intrinsic nature of mental states such as pains and holds that their essential nature is a complex set of bodily inputs (e.g., being stuck with a pin, cutting one's knee), the brain states these cause (e.g., certain neurons firing), and the outputs caused by these brain states (e.g., a desire for soothing, grimacing, and shouting, "Ouch!"). Suppose one is stuck with a pin, a pleasurable state of tasting ice cream is produced, and this, in turn, causes a desire for soothing, and grimacing, along with shouting "Ouch!" The dualist will say that the person is in the pleasurable mental state of tasting ice cream, but that he or she is wired in an odd way regarding inputs and outputs of that state. On the other hand, the functionalist will say the person is in a state of pain, in complete disregard for the what-it-is-like to the state (experiencing the taste of ice cream) because the person exhibits the pain role (e.g., is stuck with a pin, desires soothing, and grimaces and shouts "Ouch!"). For most people, functionalist views on these matters are odd and unconvincing.

Indeed, the functionalist view has distorted consciousness beyond recognition. Consciousness is a series of inner states that we experience. There is a what-it-is-like to a conscious state. Conscious states may, indeed, be caused by bodily inputs and may cause bodily outputs, but what consciousness *is*, is not what it *does*. However, physicalists who are functionalists have wanted to identify consciousness with what the brain does because that makes consciousness physical and the body movements caused by the brain (e.g., rubbing one's knee and shouting "Ouch!") can be measured.

In this way, functionalism, along with philosophical behaviorism and the type identity theory have seriously distorted the nature of consciousness. It makes

consciousness physical or implies that, for it to exist, it must depend on the brain functioning. Among other things, it rules out disembodied life after death, something many physicalists desire to eliminate. But in an ironic twist, it has been the science of near-death experiences that has demonstrated beyond any reasonable doubt that a conscious self does not depend on the brain to function; it can survive death, and can have either a heavenly or a hellish experience.[1]

So, since conscious states are not physical states, neuroscience is inept at discovering their nature. By contrast, neuroscience is good at discovering which brain states cause which conscious states (and vice versa). If we want to know how conscious states relate to and are dependent on the brain (and some brain states *are* dependent on conscious states, e.g., if you change your thinking habits, it will rewire your brain grooves),[2] neuroscience is critical and extremely helpful. But it is of little or no value in discovering the very nature of mental states in the first place.

Some who have been influenced by weak scientism disagree and think that, while dualism may be possible, neuroscientific evidence makes it quite unlikely. To cite one example, Christian theologian Nancey Murphy claims that physicalism is not primarily a philosophical thesis but a scientific one, that is, physicalism should be the guiding principle for doing science and we should expect a physical state to be what is caused by bodily inputs and causes bodily outputs. The evidence for this, she says, consists in the fact that "biology, neuroscience, and cognitive science have provided accounts of the dependence on physical processes of *specific* faculties once attributed to the soul."[3] To be sure, dualism cannot be *proven* false, concedes Murphy—a dualist can always appeal to correlations or

functional relations between soul and brain/body—but she believes that advances in science make dualism a view with little justification. According to Murphy, “science has provided a massive amount of evidence suggesting that we need not postulate the existence of an entity such as a soul or mind in order to explain life and consciousness.”[4]

In my view, this objection is misguided in two ways. First, people do not postulate the existence of conscious states in order to provide an explanation of, say, one’s own behavior—a postulation that could be rejected when a better (physicalist) postulation becomes available. No, people are directly aware of the nature of their conscious states and they simply report to others what they introspectively know.

Further, even if certain mental states are dependent upon specific regions of the brain (and there is evidence for dependency in the other direction as well), a dualist can explain the dependence as a form of correlation or causation, rather than as some sort of identity relation. (And the dependence of conscious states on brain states while embodied proves nothing about the possibility or reality of disembodied conscious states with no brain whatsoever, as in near-death experiences.) Indeed, the central issues regarding the mind (What is a thought, feeling, or belief? What is that to which my self is identical?) are basically commonsense and philosophical issues for which scientific discoveries are largely irrelevant. Science is helpful in answering questions about what factors in the brain and body generally hinder or cause mental states to obtain, but science is largely silent about the nature of mental properties/states.

To see this further, consider the following: We have discovered that if a certain type of neuron—a *mirror neuron*—is damaged, then one cannot feel empathy for another person. How are we to understand this? To answer this

question, we need to get before our minds the notion of *empirically equivalent theories*. If two or more theories are empirically equivalent, then they are consistent with all and only the same set of empirical observations. Thus, an appeal to empirical data cannot be made in favor of one of such theories over the others.

Three empirically equivalent views about the discovery of the function of mirror neurons come to mind. Each would give a different answer to the question, “What is empathy?”

Three Empirically Equivalent Views about Mirror Neurons

Strict physicalism	Empathy is identical to something physical (e.g., the firings of mirror neurons)
Mere property dualism	Empathy is an irreducible state of consciousness *in the brain*, whose obtaining depends on the firing of mirror neurons
Substance dualism	Empathy is an irreducible state of consciousness *in the soul*, whose obtaining depends (while embodied) on the firing of mirror neurons

Table 8.3

Of these three views, no empirical datum can pick which is correct, nor does an appeal to epistemic simplicity help. Epistemic simplicity is a tie-breaker, however, and the substance dualist will insist that the arguments and evidence for substance dualism are better than those for the other two options mentioned above (table 8.3).[5]

Conclusion

Neuroscience is a wonderful tool, and it should be gladly celebrated by all Christians who recognize that all truth is God’s truth. But neuroscience needs to stay in its own lane, cognizant of what it can tell us and what its limitations are. When it functions as a totalizing theory, intruding into the domain of other areas of knowledge (such as philosophy or theology), it has a distorting effect and ultimately

undermines the nature of science itself. Once again we have an example of how scientism distorts genuine knowledge and hurts the enterprise of science.

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1. For excellent defenses of the reality of near-death experiences, see Jeffrey Long and Paul Perry, *Evidence of the Afterlife* (New York: HarperOne, 2010); Long and Perry, *God and the Afterlife* (New York: HarperCollins, 2016); J. Steve Miller, *Near-Death Experiences as Evidence for the Existence of God and Heaven* (Acworth, GA: Wisdom Creek, 2012); John Burke, *Imagine Heaven* (Grand Rapids, MI: Baker, 2015). I do not accept all the interpretations of what we should believe theologically from near-death experiences (NDEs), but these incidents seem real even if people report some of the implications of and experiences during the NDE due to prior, distorting intellectual beliefs. Further, as Burke points out, the "life-reviews" in NDEs are not the two judgments in the Bible (the *bema* seat and the great white throne judgments), so the life-review is something earlier than these judgments. It could easily be the case that God presents His loving and merciful side to NDEers for his own reasons. But, interestingly, there are also a significant number of hellish NDEs that clearly indicate God is also a Being who judges.
2. See Jeffrey Schwartz, *The Mind and the Brain* (New York: HarperCollins, 2002).
3. Nancey Murphy, "Human Nature: Historical, Scientific, and Religious Issues," in *Whatever Happened to the Soul?* ed. Warren S. Brown, Nancey Murphy, and H. Newton Malony (Minneapolis: Fortress, 1998), 17, her emphasis; cf. 13, 27, 139–143.
4. Ibid., 18.
5. For a readable case for the immaterial nature of consciousness and the soul, see J. P. Moreland, *The Soul: How We Know It's Real and Why It Matters* (Chicago: Moody, 2014).

9

Scientism and First Philosophy

In his seventeenth-century work of art titled *The Triumph of Faith over Nature, Philosophy, and Science*, Peter Paul Rubens attempted to capture a widely held view of faith and reason. In his painting, Rubens depicted religion as a person seated in a triumphal chair on a cart pulled by angels. Walking beside and near the back of the cart are different figures. Among those figures are a young man and an old man representing, respectively, science and philosophy. The painting conveys the notion of an integrated worldview where faith and reason are in harmony, theology is the queen of the sciences, and the discipline of philosophy is the wise, old, long-standing friend of theology.

If a picture were created to capture the current scene, one might think of a football game with a dying old man (theology) trying to get into the stadium; a strong, sturdy running back (science) carrying the ball; and a lineman (philosophy) blocking for science.

This change in perspective has had disastrous implications for Christianity and for human life, generally.[1] In the first several chapters, I have chronicled some of these implications. So far, I have been offering criticisms of strong and weak scientism. Along the way, I have provided some positive arguments for an alternative approach to gaining knowledge of reality. But in this chapter, I wish to turn the

tables on scientism and concentrate on defending and illustrating that positive approach.

That positive approach was nicely stated by the French philosopher and historian of philosophy Étienne Gilson, who wrote, “Philosophy is the only rational knowledge by which both science and nature can be judged. By reducing philosophy to pure science man has . . . abdicated his right to judge nature.”[2]

Building on this insight, this chapter will argue that biblical studies and theology must join forces with a classic view of *first philosophy*. Sadly, today neither scientists nor theologians know very much philosophy. As a result, their views and conclusions are often shallow and prematurely formed. The purpose of recovering this “first philosophy” is so that we can (1) gain a broader and deeper view of reality than scientism can provide, and (2) have an appropriate intellectual vantage point from which to provide persuasive criticisms of scientism and of science itself, at least when it has drawn faulty conclusions by disregarding the philosophical and theological components of the topic.

In what follows, I shall, first, define, clarify, and defend “first philosophy,” and, second, provide examples of first philosophy that undermine scientism and undergird the alternative approach to reality as mentioned above.

The War against First Philosophy

What, exactly, is first philosophy? Roughly, first philosophy is the notion that there is a realm of rational investigation that (1) is the proper domain of philosophy, (2) is independent of and, indeed, more basic or fundamental than science (that is, science is built upon the foundation of the results of first philosophy), and (3) gives us knowledge of the topics studied in that realm, including knowledge of reality.

The idea of first philosophy has been central to the discipline of philosophy since Plato, but with the advent of scientism in the mid-twentieth century (and the public's general lack of exposure to philosophy in our educational system!), first philosophy has fallen into disfavor.

Philosopher George Bealer (an advocate of first philosophy) has unpacked first philosophy into the following two theses. The first he calls the "*autonomy* of philosophy":

> Among the central questions of philosophy that can be answered by one standard theoretical means or another, most can in principle be answered by philosophical investigation and argument without relying substantively on the sciences.

The second thesis he calls the "*authority* of philosophy":

> Insofar as science and philosophy purport to answer the same central philosophical questions, in most cases the support that science could in principle provide for those answers is not as strong as that which philosophy could in principle provide for its answers. So, should there be conflicts, the authority of philosophy in most cases can be greater in principle.[3]

Table 9.1 attempts to define and illustrate these two principles:

Autonomy and Authority of Philosophy

Autonomy of Philosophy	areas of philosophical investigation that *lie completely outside the competence of science*	• debates about abstract objects (e.g., whether or not there are numbers, sets, and so forth that exist outside space and time) • different interpretations of modal logic • the relative merits of utilitarianism vs. virtue ethics
Authority of Philosophy	areas which science and philosophy both investigate where *the philosophical factors carry more weight than and trump those of science*	• the nature of time • the question of whether unobservable theoretical entities of scientific theories exist (e.g., electrons) or are merely useful fictions

Table 9.1

This brief look at first philosophy, and the autonomy and authority theses, should provide some insight into why Gilson could say that philosophy is "the only rational knowledge by which both science and nature can be judged."

What Happened When We Rejected First Philosophy?

The replacement of first philosophy with science—in other words, the emergence of scientism—has radically altered the default worldview of the West, replacing Christian theism with naturalistic materialism. As scientism advocate Patricia Churchland rightly puts it, "Naturalism follows hard upon the heels of the understanding that there is no first philosophy."[4]

If philosophy is not an independent and fundamental way of knowing reality, then Churchland really has no other candidate for such knowledge besides the hard sciences. So scientism follows fairly straightforwardly from the rejection

of first philosophy, and if (especially) the hard sciences have no other field that can contribute to or correct its claims about reality, then scientism justifies not only naturalism (the natural world is all there is) but a particular version of naturalism called "strict physicalism"—reality is exhaustively described by physics and, perhaps, chemistry, so everything is physical.[5]

Besides having an impact on changing the major worldview in the West, the rejection of first philosophy has changed many—maybe most—philosophers' conception of what philosophy is all about. It goes without saying that, for 2,500 years, philosophers took themselves to be providing truth and knowledge of reality, knowing, values, and so forth. But no longer. The currently prevailing view is that only science gives us knowledge of reality, not philosophy. So what does philosophy do? According to scientism advocate David Papineau, "[T]he task of the philosophers is to bring coherence and order to the total set of assumptions we use [in science] to explain the empirical world."[6] In other words, philosophers don't study reality; they study the assumptions of science to help scientists make sure their assumptions fit well together and are nicely ordered.

In a similar vein, and speaking specifically of metaphysics, naturalist philosopher of science Rom Harré notes, "In modern metaphysics the most general concepts used in science and ordinary life are investigated. . . . Modern metaphysics is aimed at achieving clarity of thought by a careful study of concepts."[7] Harré makes clear that it is scientific concepts that are the primary aim of philosophical activity. Thus, philosophers don't study reality; they study how we *talk about* reality, or the concepts we use in thinking about reality, especially talk and concepts in science.

To bring home the severity of the impact of the replacement of first philosophy with scientism on the Western worldview and how we conceive of the purpose of philosophy, look at the following list of commonsense beliefs that philosopher Daniel Stoljar rightly claims to be inconsistent or in tension with a physicalist worldview funded by scientism:[8]

Commonsense Beliefs Inconsistent with Physicalism

Commonsense Beliefs	**Why They Are Inconsistent with Physicalism**
"people perceive things and have bodily sensations of various kinds (e.g., tastes, cramps, itches, nausea)"	these cannot be reduced to something physical
"people speak and think about the world and about each other"	these acts require there to be semantic meanings, intentionality (ofness or aboutness toward the object of thought or speech), and goals/purposes (e.g., one speaks *for the sake of* informing someone of something), and these items cannot be reduced to the physical
"at least some words have meanings"	semantic meanings or propositional content is not physical
"people's bodies, and physical objects in general, are colored, textured, have various tastes, and emit sounds and smells"	the so-called secondary qualities—colors, smells, tastes, sounds, textures—cannot be reduced to the physical, which consists of colorless, odorless, tasteless, soundless, and textureless entities such as certain wavelengths of light
"people have reasons for thinking and acting as they do, and . . . those reasons may be subjected to normative (including moral) scrutiny"	physicalists hold that reasons are not physical; brain states and not reasons cause the body to move; and there is no genuine normativity in a completely physical world
"there are mathematical and logical truths (e.g. "5 + 7 = 12") and . . . people can come to know	if such mathematical and logical statements are true, there are likely to be numbers and laws of logic that exist, are not physical, do not exist in space and time, and the mind can grasp them

these mathematical and logical truths”	

Table 9.2

Given this rather mind-boggling rejection by advocates of scientism of things we surely know, how does scientism change the purpose of philosophy? Again, Stoljar’s remarks are right on the money. First, he states several theses that are part of what he calls “the standard picture,” that is, the commonsense view of the world represented by the items in the left column above. Second, he correctly notes that, for many philosophers, their task is to reduce the commonsense view to or replace it by the physicalistic worldview certified by the hard sciences:[9]

The Physicalistic Worldview

Physicalism is true	*basic thesis*
Physicalism summarizes the picture of the world implicit in the natural sciences	*interpretive thesis*
It is most rational to believe the picture of the world implicit in the natural sciences, whatever that picture happens to be	*epistemological thesis*
Physicalism is, prima facie, in conflict with many presuppositions of everyday life	*conflict thesis*
The way to resolve these conflicts is to propose views about how to interpret [note: revise or reject] the presuppositions of everyday life so that they are compatible with physicalism	*resolution thesis*

Table 9.3

As we have seen so far in this book—and as we will see in future chapters—the idea that it is the purpose of philosophy to find a way to reduce or get rid of things that cannot be located into a strictly physical world is a disaster. Among other things, this implies that the commonsense views stated by Stoljar in table 9.2 will have to be rejected. And that is a pretty steep price to pay for retaining scientism.

Why Was First Philosophy Rejected?

But why reject first philosophy to begin with? Why not be thankful for science but also be grateful that there are other ways of knowing that give us knowledge of reality, and hold that philosophy is fundamental?

As I have surveyed the literature on these questions, most "arguments" against first philosophy merely start with a question-begging assumption of scientism. According to Papineau, for example, if we are going to study the nature of the human mind, we must start with assumptions. (Really? I don't think we start with assumptions; rather, we start with our direct, introspective awareness of our conscious states. Is our knowledge of the nature of a pain an assumption? No, it's something we know directly by first-person experience.) Papineau writes, "The obvious strategy, naturalists will argue, is to begin with our empirically best-attested theories of the mind and its relation to reality, and use these as a framework within which to raise and resolve philosophical difficulties."[10] As I read Papineau, he offers very little by way of argument for this scientistic starting point. He just assumes it.

But there *is* an argument against first philosophy, or at least an implicit argument, based on the claim that philosophical knowledge must be rejected because philosophers cannot agree about anything. But besides the fact that *scientists* disagree more than most people think, this statement is itself a philosophical assertion (it assumes an epistemological view, namely, that knowledge requires agreement by the experts), not a scientific assertion. As a result, *it is self-refuting if uttered by an advocate of strong scientism*. (It is a philosophical statement that says that only scientific statements—and not philosophical ones—can be true and known to be such.)

But there is a worse problem with this claim. It cannot even be cogently made by someone who is not an advocate of strong scientism. This is because *it is self-refuting due to the statement's own content*. Why? Because experts who study the epistemology of disagreement are in disagreement about the assertion that a claim to knowledge should be rejected if equally qualified experts disagree about the claim. Thus, the claim fails to satisfy its own criterion of intellectual acceptability and, therefore, is self-refuting.

But, in my view, the most widely stated argument against first philosophy is that those who accept it do so because they hold to a faulty view of knowledge known as *Cartesian foundationalism*. People mistakenly see the failure of René Descartes's project as a failure of any kind of foundationalism, or indeed any kind of first philosophy. As Patricia Churchland proclaims, "It is in this sense that there is no *first* philosophy. There is no corpus of philosophical doctrine concerning science and epistemology such that we can be sure it is the Truth to which all science must conform. There is . . . no Archimedean point outside all science from which we can pronounce upon the acceptability of scientific theories."[11]

Papineau says pretty much the same thing. Speaking of the idea that philosophy needs firmer foundations than science if it is going to support science, he says, "[T]his argument depends on the assumption that knowledge needs to be *certain* in the sense that it should derive from methods that necessarily deliver truths. . . . If you hold that knowledge requires certainty, then you will hold that philosophy needs to come before science."[12]

Unfortunately for Churchland, Papineau, and others who use this argument, it is entirely wrongheaded and more than fifty years out of date. To see this, and to get clear about

Cartesian foundationalism, we need to look at some background issues in epistemology—the study of the nature and limits of knowledge and rational belief. This is going to be a bit of a detour, but it will be worth it.

Foundationalism

To get started, consider the following list of words: thing, philosophical, a, knowledge, good, is. It is clear that this is not a sentence. What's missing? The words needed to form a sentence are all there. What's missing is a proper structure into which the words need to be placed to yield a well-formed sentence: "Philosophical knowledge is a good thing."

Now the same thing is true of one's set of beliefs. They are not inside one's mind as a random list of isolated beliefs that have nothing to do with each other. Indeed, they fit into a structure in which some beliefs are based on others. For example, one's belief that abortion is wrong is based on one's beliefs that, from conception, there is a human person in the womb and that a human person should not be murdered, because he or she is made in the image of God. Again, one's belief that a defendant is guilty is based on one's belief that the eyewitnesses were telling the truth.

A question arises at this point: What is the best structure, not for this or that belief as it is related to one or two other beliefs, but for all of your beliefs, such that, if your beliefs are standing in that structure, it increases the chances that you will have more rational or true beliefs than if they were in any alternative structure? What structure of beliefs is the most rational and truth-conducive?

Different answers have been given to these questions, but one answer has the longest and most widely held track record, comports best with common sense, and seems to fit how we actually support our rational beliefs on the basis of other beliefs, experiences, and so forth. That structure is captured by a view called *foundationalism*.

We all accept some beliefs on the basis of accepting other beliefs. I hear a rustling sound outside due to the movement

of leaves on our tree. I realize that a wind is blowing. My belief that there is a wind blowing is based on and justified by my belief that the leaves are rustling. The first belief (that there is a wind blowing) is indirect, i.e., it is justified mediately, that is, through or by means of the second belief (that the leaves are rustling). Now we may ask, What is it that justifies the belief that the leaves are rustling? Is it another belief? Or is it a sensory experience—the hearing of a sound?

In general, suppose P, Q, and R are three beliefs accepted by some person, and suppose P is justified on the basis of Q and Q on the basis of R. Let us call a chain of beliefs like P, Q, and R, where P is justified on the basis of Q and Q on the basis of R, an *epistemic chain*:

Epistemic Chain: Options for Justification

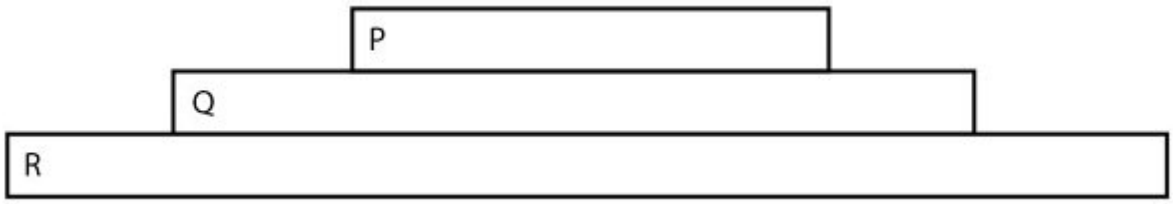

Fig. 9.1a

But what about the basis or justification for R? There are four major options.

First, we could just keep going down the steps of the foundation. Belief in R could be justified by belief in S, and S could be justified by T, and so on:

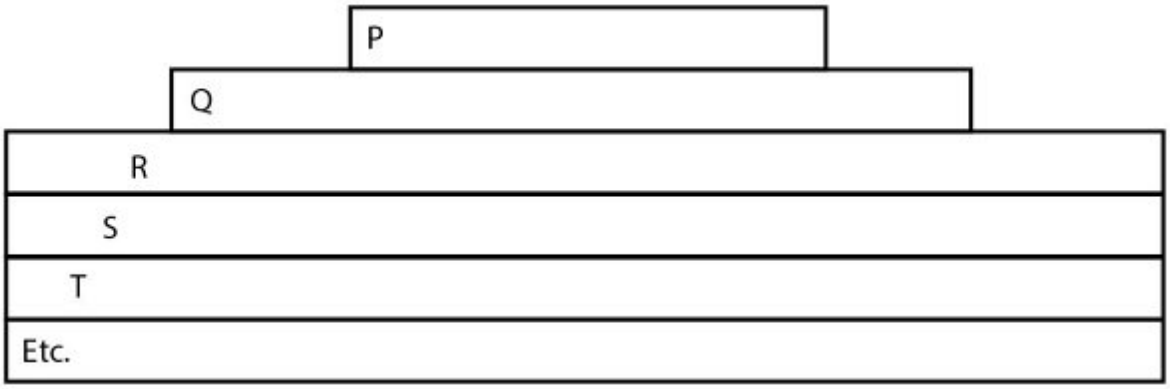

Fig. 9.1b

But once we start on this path, where do we ever stop? For that reason, most philosophers reject this option—it seems like a vicious infinite regress.

Second, we could stop the epistemic chain at R and declare that R is simply an "unjustified, brute faith assumption." In other words, it needs no basis or justification. But most philosophers reject this option as well. If P and Q ultimately rest on the justification for R, then R cannot justify P and Q if it is merely a brute posit with no justification for itself:

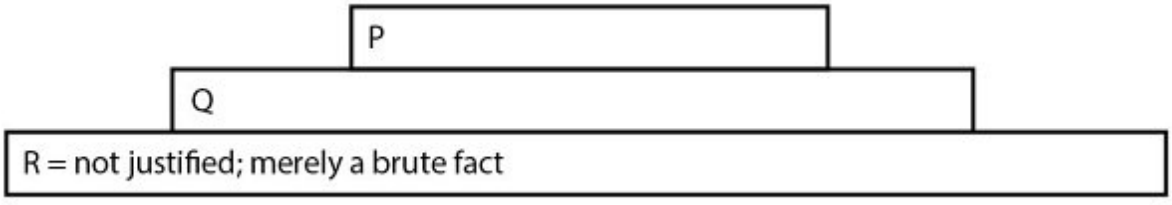

Fig. 9.1c

Third, one could stop with R and say that, somehow, R itself is justified but not on the basis of some other belief. Perhaps R is self-evident or is produced in a reliable way or is grounded in a sensory experience but not a perceptual belief:

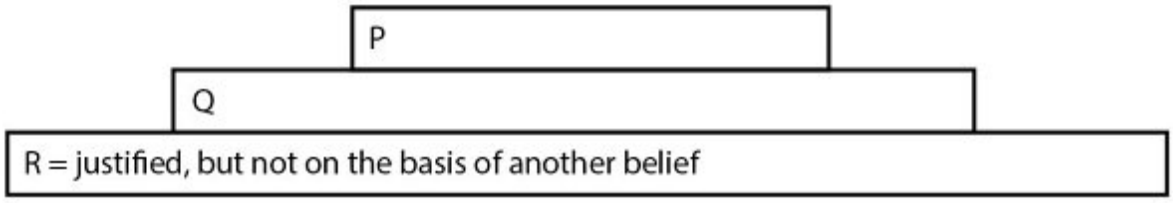

Fig. 9.1d

This is the strategy adopted by foundationalists.

Fourth, we could form a circle of justification by asserting that R is justified by P. Or we could form a web of justification, claiming that P, Q, and R all justify each other in a mutually supporting pattern of interaction:

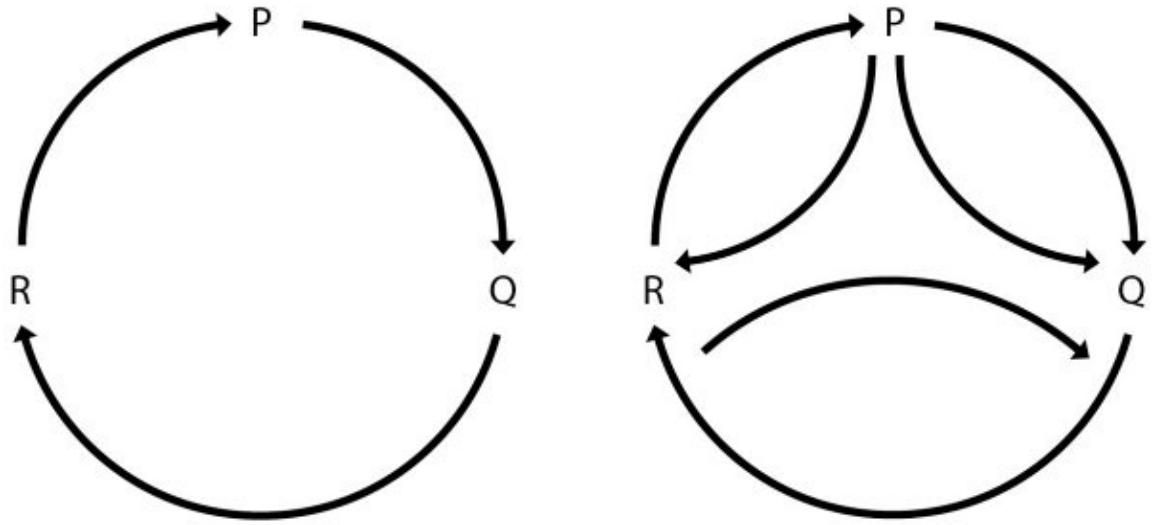

Fig. 9.1e

These final two illustrations—the circle and the web—show the coherentist perspective.

For the foundationalist, epistemic chains of justification stop with beliefs that are not justified on the basis of other beliefs. More specifically, the foundationalist notes a fundamental cleavage between beliefs we justifiably accept on the evidential basis of other beliefs (e.g., the belief that the wind is blowing is evidentially based on the belief that

the leaves are rustling) versus those we justifiably accept in a basic way, that is, not on the basis of the support that they receive from other beliefs (e.g., my belief that the leaves are rustling).

For the foundationalist, all beliefs are either *basic* (a *properly basic belief* is a basic belief that we ought to take as basic, i.e., it is not a mistake to do so) or *nonbasic*. Basic beliefs are not justified solely by their connection to other beliefs, but that does not mean they are not justified by something. Most foundationalists will say that a properly basic belief is justified by an experience or by the way the belief was formed properly by the relevant (e.g., visual) faculty. For example, my belief that the wind is blowing is justified by my belief that the leaves are rustling, and this latter belief is justified by my belief that I hear the leaves rustling. This final belief is properly basic—it is not justified by another belief. But it is justified by an experience, namely, I *seem* to hear the rustling leaves.

All nonbasic beliefs are mediately justified in some way by the relationship they sustain to the basic beliefs. For example, the belief that 13 x 12 = 156 is nonbasic and is justified by other beliefs (e.g., 2 x 3 = 6) that are basic and immediately justified for me according to foundationalism. With proper training, one can just see directly, without calculating, that 2 x 3 is 6. This belief is properly basic. But this is not so with 13 x 12 = 156. When most of us look at this, we don’t know whether or not it is true. So we have to calculate it, and when we do, we will rely on basic arithmetic beliefs (e.g., 2 x 3 = 6) to do that calculation.

The metaphor of a pyramid has sometimes been used to picture foundationalism. Just as upper regions of a pyramid are supported by lower regions until you reach the foundation, which is not supported by other parts of the pyramid, so nonbasic beliefs are related to basic,

foundational ones. As I mentioned above, many foundationalists will say that the basic beliefs are justified by experiences.

Cartesian Foundationalism

Now we are in a position to state what Cartesian foundationalism is. A Cartesian foundationalist takes the fundamental items that justify everything else to be such that it is impossible that we be mistaken about them. These ultimate items (usually, experiences) have to be completely certain or they cannot serve as appropriate foundations for everything else. Thus, for the Cartesian foundationalist, the foundational beliefs must meet extremely high rational standards, indeed too high. Cartesian foundationalism is most likely unattainable.

If you look at the statements by Papineau and Churchland earlier in this chapter as to why some philosophers accept first philosophy, they both think that it is because they are Cartesian foundationalists. The idea is that, if the assumptions of science are not completely certain and totally immune from error, then science is without adequate justification, and a skeptic about the claims of science wins.

But nothing could be further from the truth. Today, most epistemologists are foundationalists, but I do not know of a single one who is a *Cartesian* foundationalist. Cartesian foundationalism was given up more than fifty years ago. Today, most foundationalists believe that certain experiences can serve as solid foundations for our properly basic beliefs, but those experiences need not be immune from error.

Consider our example about the wind and the rustling leaves. The properly basic belief was that the leaves were rustling, and the support for that was the experience of *seeming* to hear the leaves rustling. But we all know that I

can seem to hear something and be mistaken. So while an experience of *seeming* to hear something does justify the belief that I do, in fact, hear it, the experience is defeasible, that is, capable of being mistaken.

Papineau and Churchland are seriously mistaken in their rejection of first philosophy. Why do these scholars reject first philosophy? The answer turns out to be pretty obvious. When we examine cases that are autonomous from science (outside the competency of science)—such as the proper system of ethics, the nature of modal logic, and so forth—it becomes obvious that the basic issues in these areas of reflection have nothing to do with physics, chemistry, and so forth. The basic issues are not stated in scientific language, nor could debates about them be resolved by a scientific experiment.

When we examine alleged cases where philosophical considerations carry more weight than the scientific ones, often we can easily decide whether the case is or is not a genuine example of the authority of philosophy. All one needs to do is to state the different philosophical views of the issue (say, the nature of time, and the key arguments involved), and do the same for the various scientific views and arguments.

Next, see if one cannot fully resolve the scientific issues until the philosophical ones have been weighed. If that is true, then we have an example of the authority of philosophy. If the scientific issues need to be resolved before we can consider the philosophical ones, then we *do not* have an example of the authority of philosophy. We judge this on a case-by-case basis. I think that the assumptions of science (as discussed in this and previous chapters) are examples of the authority of philosophy, and I ask you, the reader, to return to them and see if you agree.

In this section, I have tried to clarify first philosophy by stating the autonomy and authority theses; I have argued that the rejection of first philosophy is based on weak arguments or a misunderstanding of why advocates of first philosophy hold to the view. It is now time to provide examples of the autonomy and authority theses.

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1. For more on this, see J. P. Moreland, *The Kingdom Triangle* (Grand Rapids, MI: Zondervan, 2007).
2. Étienne Gilson, *The Unity of Philosophical Experience* (New York: Charles Scribner's Sons, 1937), 223.
3. George Bealer, "On the Possibility of Philosophical Knowledge," in *Philosophical Perspectives 10: Metaphysics, 1996*, ed. James E. Tomberlin (Cambridge, MA: Blackwell, 1996), 1.
4. Patricia Churchland, *Neurophilosophy: Toward a Unified Science of the Mind/Brain* (Cambridge, MA: MIT Press, 1986), 277.
5. Some naturalists claim their view implies only that everything that exists is either physical or emerges from and is entirely dependent on the physical. I have subjected this view (called "emergentism") to criticism. See J. P. Moreland, "Why Top-Down Causation Does Not Provide Adequate Support for Mental Causation," in *Neuroscience and the Soul*, ed. Thomas M. Crisp, Steven Porter, and Gregg A. Ten Elshof (Grand Rapids, MI: Eerdmans, 2016), 51–73.
6. David Papineau, *Philosophical Naturalism* (Oxford: Blackwell, 1993), 3.
7. Rom Harré, *The Philosophies of Science*, 2nd ed. (Oxford: Oxford University Press, 1985), 8–9.
8. Daniel Stoljar, *Physicalism*, New Problems in Philosophy (New York: Routledge, 2010), 14. Comments in the left-hand column of the chart are from Stoljar; comments in the right-hand column are mine.
9. Stoljar, *Physicalism*, 26.
10. Papineau, *Philosophical Naturalism*, 3.
11. Churchland, *Neurophilosophy*, 265.
12. Papineau, *Philosophical Naturalism*, 4.

10

Examples of the Authority and Autonomy Theses

In the previous chapter I attempted to define, clarify, and defend first philosophy as an alternative that respects science but also employs the authority of philosophy and autonomy of philosophy theses.

In this chapter, I want to give examples of each of these two theses, starting with the principle of the authority of philosophy and then moving to the principle of philosophy's autonomy.

Examples of the Authority Thesis

1. Stephen Hawking on the Beginning of the Universe

In the last few decades, there has been a stunning revival of an argument for God's existence from the fact that the universe had a beginning. The argument—called the "*kalam*" cosmological argument—is, in fact, many centuries old, but it has been given new strength and clarity in recent times. For our purposes, there are four common ways to argue for the universe's beginning: (1) the impossibility of an actual infinite set of concrete entities such as events; (2) the impossibility of crossing an actual infinite series of events by successive addition; (3) the Standard Big Bang model; and (4) the Second Law of Thermodynamics.[1] Most advocates of the *kalam* argument for God's existence hold

that the first two arguments, which are philosophical, carry more weight than the last two, which are scientific, and thus, on the assumption that arguments for and against this claim are themselves philosophical, this seems like a clear example of the authority of philosophy thesis.

However, in his book *A Brief History of Time*,[2] Stephen Hawking develops a "no boundary" model of the "beginning of the universe" and he uses imaginary time (e.g., multiples of the square root of -1) to avoid a cosmological singularity (an absolute beginning) while still retaining a finite past, and to depict the initial segment of space-time as rounded off very much like the South Pole being the "beginning" of the earth and various circles of latitude playing the role of time itself. Just as you cannot ask what is south of the South Pole, you can't ask what came before the rounded off section of the initial segment of space-time. So there is no need for a beginning, and yet the past is finite.

Philosophers, especially philosophers of science, have responded to Hawking in two ways. First, the philosophical support for the *kalam* cosmological argument's first premise (the universe had a beginning) is stronger than the support for Hawking's model, so one should still believe in a beginning.

Second, because Hawking's model employs imaginary time—a notion that is literally conceptually unintelligible if taken to depict reality as it really is—the model should be understood in an anti-realist way (e.g., in an instrumentalist or positivist way, e.g., as a useful fiction) rather than in a realist way (as an actual depiction of the real world). In fact, Hawking had acknowledged that his view is, indeed, not a realistic depiction of reality but, rather, a theory that merely has instrumental value.[3] Since Hawking has long argued that philosophy is dead, his admission that this model is nothing but a useful fiction must have come from his

reading of philosophy of science in order for him to explicitly call himself an antirealist, a positivist, and an instrumentalist.[4]

Thus, it was the discipline of philosophy that both placed Hawking's model in the classification to which it belongs (a useful fiction), and continued to show that his model did nothing whatsoever to undermine belief in the universe's beginning.

2. Stephen Hawking on the Universe Coming to Be from Nothing

In *The Grand Design*, Hawking and his coauthor, Leonard Mlodinow, claim that quantum physics has made the need for a creator and designer superfluous.[5] This is because the universe can "create itself," that is, it came into existence out of nothing.

This claim upset the faith of a number of believers because it was the considered judgment of a scientist, indeed, one of the top living scientists. But alas, Hawking and Mlodinow may well be great scientists, but they are very poor philosophers. Why? Because their concept of "nothing" is not the same as the philosophical one, and the philosophical notion is the relevant one in deciding on the "need" for a creator. For Hawking and Mlodinow, "nothing" means a quantum vacuum, which contains energy and is itself located in space. The universe, according to them, comes into being spontaneously as a fluctuation of the energy in the vacuum.

This is hardly a case of the universe coming into being from nothing! The philosophical notion of nothing is just that—the complete and total lack of any being whatsoever, including the absence of particles, causal powers, fields, properties, and so on. Given this notion of nothing, it becomes self-evident that, necessarily, something cannot

come *from* nothing without a cause, because there is nothing to come from!

The Hawking/Mlodinow claim reminds me of the joke in which a group of scientists come up to God and tell him that they don't need him anymore because they can now create life. So God asks them to show him their new discovery. The scientists bend down and scoop up some dirt, but before they can go any farther, God interrupts them and says, "If you don't mind, get your own dirt!" Similarly, if we say that we don't need God anymore because the universe can come from "nothing" (that is, a quantum vacuum), then the proper response from God would be, "If you don't mind, get your own quantum vacuum!"

Again, the philosophical considerations carry more weight than do the scientific claims.

3. The Origin of Life

Whether or not we can discover a reasonable naturalistic and scientific explanation for the origin of life without the need for divine intervention, or whether we can even discover characteristics of life that are best explained by an intelligent designer, has long been a topic of debate. And that debate has, for quite some time, centered on scientific considerations, e.g., the high improbability of chance and natural law being able to do the job.

But some philosophers have resisted in principle (and not due to any current limitations of our scientific knowledge) the notion of a purely naturalistic, physicalistic account of life's origin. And they have done this on the basis of a purely philosophical argument. To begin with, it has been very difficult for biologists to define life. As origin of life researcher Antonio Lazcano notes, "Life is like music; you can describe it but not define it."[6] According to Fazale Rana, biologists have collected a list of around a hundred different

definitions of life.[7] According to most biologists, some of the essential characteristics of life include biological stability, permanence, and coherence; being made of atoms, molecules, and cells that obey the laws of chemistry and physics; being composed of a highly structured homeostatic nature; being able to ingest nutrition, expel waste, and reproduce.

But scientific or naturalistic attempts to define or provide essential characteristics of life flounder because, as many philosophers have pointed out, “life” is a “univocal, projectable predicate.” What does this mean? First, the term “life” is something we predicate (i.e., affirm) of certain things and not of others. Second, “life” is “univocal” and not equivocal; that is, it means the same thing whenever we employ the term. Thus, to say that a dog or a human or a fish is alive is to use “life” in the same way. Different living things may live in different ways and sustain their lives by employing different factors, but they are all “living.” We don’t have one definition of “life” for a dog and another for a human or a fish. If we did, “life” would be an unwieldy predicate of which we would have no understanding when we applied it to a newly discovered creature.

Finally, “life” is “projectable.” While we start out by using the term for living things with which we are acquainted, we can use the term for yet to be discovered actual or possible living things (e.g., life in outer space, or unicorns).

But now a problem arises for biological attempts to define or essentially characterize life. “Life” is also univocally predicable of disembodied souls after death, of angels, and of God himself. Even if none of these things were to exist, their possible existence is coherent and intelligible, and the projection of “life” into possibly living things should be univocal (i.e., have the same meaning as when “life” is applied to actual organisms.) But none of these entities

satisfy physical/biological characteristics for life. Thus, life itself cannot be physical, so the argument goes, and there will never be a strictly scientific account of life or its origin. To get life from rearranging matter is to get something (life, which is not physical) from nothing (brute matter that does not have life).

Interestingly, many philosophers have provided new evidence for this argument by claiming, following biologists, that living things are constituted by information. But apart from a few exceptions, many, perhaps most philosophers that work in this area have claimed that information is immaterial, more fundamental to reality than matter, and, given its nature, there can be no material explanation for the origin of (immaterial) information and, thus, for the origin of life.[8]

Examples of the Autonomy Thesis

Philosophy of Mind: First- and Second-Order Questions

	Types of Questions	**Examples of Questions**
FIRST-ORDER QUESTIONS	**Ontological**	To what is a mental or physical property identical? To what is a mental or physical event identical? To what is the owner of mental properties/events identical? What is a human person? How are mental properties related to mental events (e.g., do the latter exemplify or realize the former)? Are there (Aristotelian or Leibnizian) essences, and if so, what is the essence of a mental event or of a human person?
	Epistemological	How do we come to have knowledge or justified beliefs

		about other minds and about our own minds? Is there a proper epistemic order to first-person knowledge of one's own mind and third-person knowledge of other minds? How reliable is first-person introspection, and what is its nature (e.g., is it an experiential seeming or a disposition to believe)? If reliable, should first-person introspection be limited to providing knowledge of consciousness, or should it also include knowledge about one's own ego?
	Semantic	What is a meaning? What is a linguistic entity, and how is it related to a meaning? Is thought reducible to or a necessary condition for language use? How do the terms in our commonsense psychological vocabulary get their meaning?
SECOND-ORDER QUESTIONS	**Methodological**	How should one proceed in analyzing and resolving the first-order issues that constitute the philosophy of mind? What is the proper order between philosophy and science? Should we adopt some form of philosophical naturalism, set aside so-called first philosophy, and engage topics in philosophy of mind within a framework of our empirically best-attested theories relevant to those topics? What is the role of thought experiments in philosophy of mind, and how does the "first-person point of view" factor into

		generating the materials for formulating those thought experiments?

Table 10.1

1. The Nature and Existence of Consciousness and the Soul

I doubt that any list of the proper issues within any sub-branch of philosophy would be complete. Still, it is possible to provide a reasonably adequate characterization of the central first-order topics that are ubiquitous in the literature in philosophy of mind. Those topics tend to revolve around four interrelated families of issues constituted by the kinds of representative questions shown in table 10.1.

These are the sorts of questions that form the warp and woof of philosophy of mind. Please read the list carefully. It becomes evident, as we shall see, that these are in no way scientific questions; they are philosophical to the core and nicely illustrate the autonomy of philosophy thesis. But, you may respond, as Nancey Murphy has (we saw her view earlier), "[S]cience has provided a massive amount of evidence suggesting that we need not postulate the existence of an entity such as a soul or mind in order to explain life and consciousness."[9] This "evidence" consists of the fact that "biology, neuroscience, and cognitive science have provided accounts of the dependence on physical processes of *specific* faculties once attributed to the soul."[10]

I offer two responses, the first stated nicely by C. Stephen Evans regarding the findings of "localization" studies:

> What, exactly, is it about these findings that are supposed to create problems for dualism [and therefore for the existence of a mind or soul]? . . . Is it a problem that the causal effects should be the product of specific regions of the brain? Why should the fact that the

> source of the effects are localized regions of the brain, rather than the brain as a whole, be a problem for the dualist? It is hard for me to see why dualism should be thought to entail that the causal dependence of the mind on the brain should only stem from holistic states of the brain rather than more localized happenings.[11]

Secondly, as we saw earlier, all neuroscience can do is establish precise brute correlations, causal relations, or dependency relations between mental and physical states. It can tell us nothing about the intrinsic nature of consciousness or whether or not there is a soul. These are philosophical questions. To see this, let's revisit a discussion we had in chapter 8. Consider the discovery that if one's mirror neurons are damaged, then one cannot feel empathy for another. How are we to explain this? You may recall that three *empirically equivalent solutions* (solutions consistent with all and only the same set of observations) have been offered to explain the phenomena:

Three Empirically Equivalent Views about Mirror Neurons

Strict physicalism	a feeling of empathy is identical to the firings of mirror neurons
Mere property dualism	a feeling of empathy is an irreducible state of consciousness in the brain whose obtaining depends on the firing of mirror neurons
Substance dualism	a feeling of empathy is an irreducible state of consciousness in the soul whose obtaining depends (while embodied) on the firing of mirror neurons

Table 10.2

As I noted in chapter 8, no empirical datum can pick out which of these three is correct, nor does an appeal to epistemic simplicity help. Epistemic simplicity is a tie-breaker, however, and the substance dualist will insist that the arguments and evidence for substance dualism are

better than those for the other two options mentioned above.

2. Methodological Naturalism, Agent Causation, and the Nature of Science

When it comes to the task of defining or giving the essential characteristics of science, that task belongs to philosophers and historians of science, and not to scientists themselves.

Perhaps the main philosophical issue in the theistic evolution/ intelligent design dialogue involves the relationship between science and the appropriateness of using science to warrant the inference to an intelligent cause for some phenomenon. Central to this dialogue is the question of whether or not science must adopt *methodological naturalism*, roughly the idea that, while doing science, one must seek only natural causes/explanations for scientific data.

There has been some controversy as to which field is the proper place to turn to in order to seek professional expertise in resolving this debate. Nor is the question of professional expertise merely an academic matter of turf protection, because, currently, it is largely scientists and science educators who are the gatekeepers for the public schools in this area.

That there is a controversy can be seen from this statement by J. W. Haas Jr., former editor of the influential *Perspectives on Science and Christian Faith*: “The place of the philosopher in the practice of science has long been controversial. Whether philosophers should (can?) be the arbiters of what constitutes science remains problematic for the working scientist.”[12] Along similar lines, scientist Karl Giberson rejects “the traditional viewpoint that practicing scientists find so annoying, namely that philosophers are

the relevant, competent and final authorities to determine the rules of science."[13]

Actually, the issue here is not controversial at all, since the central topics do not involve how to *practice* science (which requires familiarity with instrumentation, procedures, etc.), but how to *define* science and *distinguish* it from nonscience or pseudoscience. To understand this debate and the proper field of study for resolving it, we must first make a distinction between first- and second-order issues. A first-order issue is a topic *of* science *about* some phenomenon, e.g., how to predict earthquakes or manipulate chemical reaction rates.

A second-order issue is a topic *of* philosophy *about* science itself, e.g., its methods, its nature, its differences from other fields. Now the question of how to define science is clearly a topic for philosophers and historians of science. This is not to say that scientists and others cannot be a part of this discussion. It is merely to affirm that, when they participate, they will be largely dealing with philosophical issues for which they are not professionally trained.

The fact that these issues are philosophical and not primarily scientific can be seen from the following: Read the relevant debates and discussions and ask what scientific experiment, what scientific procedure, one would use to resolve the dispute. Or get any college catalog and look at the course descriptions in different branches of science. You will discover that almost nowhere in an undergraduate or graduate program in any branch of science are topics such as the definition of science discussed, except perhaps in the first week of freshman chemistry. By contrast, entire graduate study programs in the history or philosophy of science are devoted to definitions of science and to drawing lines of demarcation between science and other fields.

Conclusion

In this chapter we have seen that other branches of inquiry besides science—in particular, philosophy—provide knowledge of reality that is either completely independent of scientific discoveries (for example, debates about moral relativism vs. absolutism) or more authoritative than science. Two things of great importance for Christians follow from these theses. First, philosophy has always been considered a handmaid, a servant of theology. So when theologians and biblical scholars work with philosophers to make a carefully presented and defended thesis about the world (for example, that human beings have souls that are in deep, two-way causal interaction with their brains) that conflict with what most scientists are claiming (that we are merely material objects—our brains and bodies), we should not automatically accept the scientific claim and revise the Bible to harmonize with the latest science. Rather, this chapter demonstrates that we often have more rational evidence and authority for the carefully developed theological claim than scientists do for their conflicting claim. So if a conflict arises between current scientific assertions and traditional interpretations of the Bible, we should take a deep breath and give our evangelical (or other) scholars time to address the issue, all the while having confidence that it is likely that the traditional interpretation of Scripture (if it is carefully done) will eventually win the debate. So we stay the course, admit that as of now there is a conflict, and remain confident that we have good reasons for not revising our views.

Second, methodological naturalism is the main thing that is keeping intelligent design from being taken seriously by scientists and educators. And, sadly, scientists and educators are the gatekeepers for what can and cannot be taught as science in the public schools, for what is and is

not reasonable to believe. But as we have seen in this chapter, definitions of the nature of science, including arguments for and against methodological naturalism, are largely philosophical issues. Thus, philosophers should be the gatekeepers here, and the majority of philosophers of science agree that intelligent design theory or even creation science (using the Bible to formulate and test scientific models) are examples of science, even if those philosophers are atheists and don't believe these theories are true. So, again, we should not be bullied by scientists and educators who define science in such a way that only naturalistic explanations are allowed.

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1. We will take a closer look at the Big Bang model and the Second Law of Thermodynamics in chapter 12.
2. Stephen Hawking, *A Brief History of Time* (New York: Bantam, 1988).
3. Stephen Hawking and Roger Penrose, *The Nature of Space and Time* (Princeton, NJ: Princeton University Press, 1996), 3–4, 121; cf. 53–55.
4. Hawking and Penrose, *Nature of Space and Time*, 3–4, 53–55, 121.
5. Stephen Hawking and Leonard Mlodinow, *The Grand Design* (New York: Bantam, 2010).
6. Antonio Lazcano, "The Transition from Nonliving to Living," in *Early Life on Earth*, ed. Stefan Bengston (New York: Columbia University Press, 1994), 61.
7. Fazale Rana, *Creating Life in the Lab* (Grand Rapids, MI: Baker, 2011), 24.
8. See William Dembski, *Being as Communion* (Burlington, VT: Ashgate, 2014), iv, xii, xiv, 75, 77.
9. Nancey Murphy, "Human Nature: Historical, Scientific, and Religious Issues," in *Whatever Happened to the Soul?* ed. Warren S. Brown, Nancey Murphy, and H. Newton Malony (Minneapolis: Fortress, 1998), 18.
10. Ibid., 17, cf. 13, 27.
11. C. Stephen Evans, "Separable Souls: Dualism, Selfhood, and the Possibility of Life after Death," *Christian Scholar's Review* 34 (2005): 333–334.
12. J. W. Haas Jr., "Putting Things into Perspective," *Perspectives on Science and Christian Faith* 46 (March 1994): 1.
13. Karl Giberson, "Intelligent Design on Trial—A Review Essay," *Christian Scholar's Review* 24 (May 1995): 460.

11

How Do We Explain Things?

The ability to explain things and to seek explanations is at the heart of the intellectually virtuous life. But few of us stop to consider that there are different types of explanations for various phenomena we encounter. For example, the philosopher of religion Richard Swinburne has made the rather obvious—though often overlooked—point that there is a great difference between a standard, physical, *scientific explanation* for some event and a *personal explanation*.[1] In this short chapter, I want us to get our bearings regarding these two types of explanation, understanding how they are each important in their own right and useful for accounting for different kinds of events. This will provide a foundation for the next chapter, where I will seek to show that there are various things that science cannot, even in *principle*, explain.

Standard Scientific Explanations

In standard scientific explanation, a state (also called an event) or a change of state is explained. For example, we may try to explain why the pressure of a gas is in a certain state or why it changed into that state. Or we may try to determine the reason a tornado was formed. In such cases, one event causes another event in accordance with some law of nature. So we have *event-event causation* (event A

causes event B) or *state-state causation* (state A causes state B).

Associated with event causation is *a "covering law" model of explanation* according to which some event is explained—or covered—by giving a valid deductive or inductive argument for that event. Such an argument utilizes two features: (1) a universal or statistical law of nature, and (2) some initial causal conditions.

Take, for example, the following explanation:

1. All metal rods expand if heated.
2. Metal rod X was heated.
3. Therefore, metal rod X expanded.

According to the covering law model of explanation, we explain why rod X expanded when we subsume it under a *general law of nature* (all metal rods expand if heated) and factor the *initial conditions* into that law (rod X is metal and was heated). Plug the fact (stated in premise 2) into the law of nature (as stated in premise 1), and, presto, we get the conclusion which explains why the event happened (premise 3).

Another example of the "covering law" model of explanation can be seen using the ideal gas law, which we looked at earlier. You may remember the formula, PV=nRT:

P	pressure
V	**volume**
n	amount of gas (in moles)
R	a fixed number (.0821)
T	temperature

Table 11.1

So a covering law model of explanation for the temperature of the gas would look like this:

1. PV=nRT
2. The gas in our container has P_1, V_1 and n_1.
3. Therefore, the gas in our container has T_1.

In this case, we want to explain why our gas has temperature T_1. And we explain this by citing the law of nature (expressed by the ideal gas equation in premise 1), plug in our initial conditions (as stated in premise 2), and we therefore explain the fact (stated in the conclusion, 3).

Even though many believe the covering law of explanation is a completely adequate standard scientific explanation, others hold that, while it may be a *necessary* condition of explanation, it is not *sufficient* by itself. They argue that it needs to be supplemented by some model that tells us *why* the universal law is true in the first place.

Let's look again at our second case above, seeking to explain the temperature of the gas in our container. Yes, PV=nRT is the relevant law of nature of ideal gases. However, one can still ask *why* this equation succeeds in describing the behavior of gases. And to answer that, scientists have developed a model that contains a mechanism that *undergirds* and further *explains* the ideal gas law.

The model, in this case, is the ideal gas model. *Gases* are taken to be collections of tiny atoms or molecules that are assumed to be point particles that engage in completely efficient elastic collisions (no loss of momentum). Moreover, *temperature* is reduced to atomic/molecular motion, and *pressure* is reduced to the rate at which the atoms/molecules of the gas collide with a certain area of the container wall. Thus, for example, if we keep the volume constant (as in a pressure cooker) and then increase the

temperature, the atoms/molecules are going to get agitated and move around much faster (this is what temperature actually is, in the ideal gas theory) and this will, in turn, cause more of them to hit the container wall per second (pressure).

So the ideal gas model provides an *explanatory picture* of what is going on, including a *mechanism* (agitating the gas's atoms/molecules) that further explains the ideal gas law.

Personal Explanations

Standard scientific explanations are crucial. But they must stay in their lane. They are not the only way to explain why things happen.

A *personal explanation* of some event or state of affairs intentionally brought about by a person (divine or otherwise) will employ notions such as the *intention* of the agent and the relevant *power* of the agent that was exercised in causing the state of affairs.

Let's say that June sets the dinner table in a certain way in order to provide a relaxing dinner for her neighbors. We can break this into its various elements and identify them as follows:

R	result
P	person
I	intention
B	basic power

Table 11.2

So we would say we are offering a personal explanation of a *Result* (the dinner table is set a certain way) brought about by a *Person* (June) by citing her *Intention* (to provide a relaxing meal for her neighbors) and the exercise of her

Basic power (to set the dinner table). This power, by the way, is not just a theoretical capacity but an actual ability—so June has the basic power of setting the table but not of lifting a piano by herself. Furthermore, not everyone has this power (e.g., her two-year-old son Alex). When it's all said and done, the *agent* brought about a *result* by exercising a *power* in order to realize an *intention* as an irreducibly teleological goal.[2]

These kinds of explanation are used all the time, especially in court. In a murder trial, for example, the jury seeks *personal* explanations: Who committed the murder? What power did he use to do this? Did the alleged killer actually possess that power, and could he exercise it at the right place at the right time? What was his intention?

A personal explanation does not consist in offering an impersonal, unintentional mechanism, but rather, in correctly citing the relevant person, his or her intentions, and the basic power exercised. A covering law model of explanation, in contrast, would be out of court (pun intended) in a jury trial. No jury wants to know the natural law and relevant formula needed to calculate why bullets are able to be discharged from a gun—but they do want to understand who the murderer was and why he decided to use his gun to fire a bullet into the victim.

Criteria for Things That Are Scientifically Unexplainable

In the next chapter, I want to look at five things that science cannot explain, even in principle. But before we do that, we need to have criteria in place for knowing why it would be the case that science could not explain something.

Richard Swinburne, who made the observation we cited at the beginning of this chapter about the differences between scientific and personal explanations, went on to identify two

features that do not fit into any pattern of scientific explanation: phenomena that are too odd, and phenomena that are too big.[3] Let's look at these in turn.

Phenomena That Are Too Odd to Fit into a Pattern of Scientific Explanation

What would it mean for a phenomenon to be "too odd" to be explained by science?

1. When You Have to Add New Laws Just to Make Sense of the Event

Swinburne argues that (1) if there is good scientific evidence for a scientific theory covering a range of phenomena, and (2) if certain phenomena occur within this range that are *not* a consequence of the theory, (3) then any attempt to *revise* the theory so that it now has laws that predict such phenomena would make the theory so complex and ad hoc so as to be irrational.

We can apply Swinburne's argument by thinking of a scientific system of medical laws that cover various phenomena regarding the body (how it breaks down, what disease does and does not do to it, etc.). We then encounter various strange phenomena that should fit within the theory's range of application (items regarding the body, disease, and so forth) but which do not actually conform to the theory's current laws and forms of explanation. Thus, these phenomena would require either an expansion of the theory to include them or an abandonment of the theory as inadequate to explain all medical cases, since these items cannot fit easily into a naturalist theory of explanation:

- deformed limbs returning to normal when prayed for,[4]
- people who have been dead for two to three days coming back to life due to prayer,[5]

- people going through significant periods of time when they are dead and have no brain activity at all but then returning to life and reporting having been conscious during the entire time and providing evidence of things they saw in the emergency room and elsewhere that they could not have known if they were not conscious and "out of their body."[6]

Swinburne's point is that any attempt to revise the medical theory so that its laws can now predict apparent miracles would make the theory hopelessly complex and arbitrary. Think of all the laws that would have to be revised to take the form "when missionary doctors pray for deformed limbs they will straighten out." And the only reason these bizarre new formulations would have to be incorporated into the medical theory would be to avoid an undesired, miraculous, theistic explanation. Here's the bottom line: *changing the laws of nature to incorporate what are obviously miracles is an example of incorporating the odd (a miracle) into a law that just doesn't fit the odd event. The new law is an improper ad hoc adjustment of the law, an adjustment whose sole justification is to save the law while avoiding an appeal to a miracle. There is no other set of independent reasons for adjusting the law.*

2. When You Have Correlations Leaving You with Numerous Unwieldy Brute Facts

Here's another example of phenomena that do not fit into a pattern of scientific explanation. Neuroscientists are trying to develop laws that govern the relationship between one brain state and another brain state. For example, one proposed law goes like this: "Neurons that fire together, wire together." In other words, if a group of neurons all fire together, they tend to "groove" or group together so that

they seem to be wired together to fire simultaneously on a regular basis. So far, so good.

But now suppose that neuroscientists try to go beyond these strictly physical laws, to add new laws that correlate brain states (such as C-fibers firing) with *mental* states (such as feeling pain). We would end up with an unruly list of hundreds of thousands, maybe millions, of brute-fact correlations between various mental and physical states. The expansion of neuroscientific theory to include such correlations would make the theory so utterly complex that the theory itself would be undermined.

As naturalist philosopher Jaegwon Kim notes, if we do not identify mental and physical properties, and mental and physical states, and, instead, leave them as two different things that are correlated with each other, then

> all such correlations would have to be taken as "brute" basic laws of the world—"brute" in the sense that they are not further explainable and must be taken to be among the fundamental laws of our total theory of the world. . . .
>
> But such a theory of the world should strike us as intolerably complex and bloated—the very antithesis of simplicity and elegance we strive for in science.[7]

Because Kim seeks to operate within a scientific framework only, the oddness of such correlations is a problem for him. But Swinburne and I think this problem has another simple solution employing a personal explanation: God had reasons to create things this way! I'll have more to say on this below.

3. When You Have New Phenomena Utterly Unique from Anything in the Old Theory

The example of consciousness provides another characteristic of oddness. *If the new phenomenon*

incorporated into the old theory is so utterly unique and different from every other entity in the theory such that the new phenomenon's appearance cannot, in principle, have been predicted by the old theory, then the expanded version of the old theory is false.

According to scientism, the entire history of the universe was a history of strictly physical entities until the very first sentient beings evolved, and prior to the appearance of these beings, there were no sensations, thoughts, desires, and so forth. And the appearance of consciousness was utterly unpredictable from even exhaustive God-like knowledge of brute matter.

Thus, the nature of consciousness is *odd*—it does not fit or is not at home in a naturalistic physical worldview. As naturalist philosopher Colin McGinn admits, consciousness is one of the most mystifying features of the cosmos. He claims that its arrival borders on sheer magic because there seems to be no naturalistic explanation for it:

> How can mere matter originate consciousness? How did evolution convert the water of biological tissue into the wine of consciousness? Consciousness seems like a radical novelty in the universe, not prefigured by the after-effects of the Big Bang; so how did it contrive to spring into being from what preceded it?[8]

A good question indeed!

4. When You Have Phenomena Contingently Related to Physical Facts

Finally, another characteristic of oddness is *the contingency of the odd phenomenon*. A full, adequate scientific explanation shows why some fact *must* occur, given another fact. The cause-fact necessitates that the effect-fact take place. For example, the ideal gas equation and supporting theory show that, at constant volume, if the temperature of

a gas rises, the pressure *must* rise. An increase in temperature *necessitates* a rise in pressure.

But brain state correlations with conscious states are utterly contingent—they easily could have been other than they are. For example, if God had wanted to, he could have created beings with our brain states but which had no conscious states at all. Or instead of C-fiber firings being correlated with a feeling of pain, it could easily have turned out that C-fiber firings were correlated with a feeling of love or pleasure. There is no contradiction in these contrary-to-fact scenarios, and by employing physical theory alone, one cannot predict or give any reason whatsoever as to why a certain conscious state as opposed to another is correlated with a specific brain state.

If we can show that some phenomenon (rising temperature) necessitates another (rising pressure), then rising pressure is not odd at all. But if utterly contingent brute correlations are discovered, such as those that obtain between brain and conscious states, the correlations are odd. Why? Because they did not *have* to be the way they are, and we are left with the puzzling oddness of why things turned out the way they did.

Related to this problem, David Papineau, the naturalist and scientism advocate whom we met in chapter 9, discusses attempts to accept a commonsense view of conscious states as nonphysical, and to simply call them "emergent properties" that arise when matter reaches the right complexity. If we accept this approach, says Papineau, "then we still seem to face the question: *why* does consciousness emerge in just those cases? And to this question physicalist 'theories of consciousness' seem to provide no answer."[9]

In sum, according to Swinburne, a phenomenon is scientifically inexplicable if it is odd. And I have spelled out

four characteristics of oddness:

(1) To explain the odd phenomenon, the previous physical theory must take on new laws that leave the adjusted theory so complex and *ad hoc* in its formulation, that it is odd.

(2) When the new phenomenon leaves us with a large number of unwieldly brute facts that cannot be explained and that makes our laws or theories violate the principle of simplicity.

(3) If the new phenomenon is so utterly unique compared to anything else in the old theory, then the phenomenon is odd and cannot properly be explained by an expanded new theory.

(4) A full, adequate scientific explanation should show why some phenomenon must occur, given another phenomenon, but brain state/mental state correlations are contingent, and, therefore, they are odd brute facts without a scientific explanation.

Phenomena That Are Too Big to Fit into a Pattern of Scientific Explanation

Swinburne's first characteristic of the scientific inexplicability of some phenomenon is its *oddness*. His second characteristic is that the phenomenon is too *big*.[10] Rather than explain the "too big" criterion here, let us delve into some examples of things that science cannot in principle explain. I think that if we do this, the "too big" factor will become obvious. To that subject we now turn in the next chapter.

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1. Richard Swinburne, *The Existence of God*, 2nd ed. (Oxford: Clarendon, 2004), 26–45. I am not claiming that personal explanation cannot be scientific. Later, we will see that personal explanation is central to intelligent design science. I am simply pointing out that there is a standard type of physical explanation used in science and it differs from personal explanation.
2. When someone acts intentionally, say, going to the grocery story, they act for the sake of some goal, purpose, or end, and that is what it means to act "teleologically."
3. Ibid., 74.

4. See cardiologist Chauncey Crandall's *Touching Heaven* (New York: FaithWords, 2015), 37.
5. See Reinhardt Bonnke, *Raised from the Dead* (New Kensington, PA: Whitaker, 2014); also, consult the accounts in Crandall, *Touching Heaven*. It would be extremely unwise and irrational to make judgments about the credibility of these accounts without having the integrity of reading them first with an open mind. For an academically high-level, scholarly treatment and documentation of the numerous miraculous acts of God happening all over the world today, see Craig Keener's two-volume set *Miracles: The Credibility of the New Testament Accounts* (Grand Rapids, MI: Baker, 2011). And no discussion of people being raised from the dead would be complete without mentioning the evidence for the bodily resurrection of Jesus of Nazareth from the dead. See N. T. Wright, *The Resurrection of the Son of God* (Philadelphia: Fortress, 2003); Gary Habermas and Mike Licona, *The Case for the Resurrection of Jesus* (Grand Rapids, MI: Kregel, 2004); Mike Licona, *The Resurrection of Jesus: A New Historiographical Approach* (Downers Grove, IL: InterVarsity Press, 2010); William Lane Craig, *The Son Rises* (Eugene, OR: Wipf & Stock, 2000).
6. See Eben Alexander, *Proof of Heaven* (New York: Simon & Schuster, 2012). In my view, it is beyond reasonable doubt that Alexander left his body, was conscious when his brain was completely unable to sustain consciousness, and went to another realm. However, I think that the interpretation he gives to some of his experiences is erroneous. For more on the stunning evidence for the reality of near-death experiences (which should be called "after-death experiences"), see the sources cited in chapter 8, note 1.
7. Jaegwon Kim, *Philosophy of Mind*, 3rd ed. (Boulder, CO: Westview, 2011), 101.
8. Colin McGinn, *The Mysterious Flame* (New York: Basic Books, 1999), 13–14.
9. David Papineau, *Philosophical Naturalism* (Oxford: Blackwell, 1993), 119.
10. Swinburne, *Existence of God*, 75.

12

Five Things Science Cannot In Principle Explain (But Theism Can)

The heart of scientism is the conviction that science can explain virtually everything. If there is not a valid scientific explanation for an event or state, then that is not properly an object of our knowledge. In reality, though, there are many things that science cannot explain. And the problem is not that we lack sufficient data—the problem is that these are the sorts of things that science cannot explain, even in principle. Moreover, these things are items that we know to be true. What makes all of this especially interesting is that theism *can* explain them.

Let's look at five things that theism can explain but science cannot.

1. Science Cannot Explain the Origin of the Universe It is now beyond reasonable doubt that the universe—the system of time, space, and matter/nonpersonal energy—began to exist at some finite time ago (13.8 billion years ago). The *kalam* cosmological argument—a powerful argument from this fact for God's existence—

was formulated many centuries ago, but it has received renewed interest in the last few decades: 1. The universe had a beginning.

2. The beginning of the universe was caused.
3. The cause of the beginning of the universe was personal.

Philosophical Evidence That the Universe Had a Beginning As we saw in an earlier chapter, one philosophical argument for premise 1 involves the impossibility of crossing an actual infinite (an actual infinite is a collection of things that is infinitely larger than any finite number) number of events. For example, if one started counting 1, 2, 3, . . . , then one could count forever and never reach a time when an actual infinite amount of numbers had been counted. The series counted could increase forever (what's called a potential infinity), but would always be finite (and thus could never be an actual infinity).

Trying to count to infinity is like attempting to jump out of a pit with infinitely tall walls—walls that literally go forever without top edges to them. No matter how far one counted, no meaningful progress would be made because there would always be an infinite number of items left to count!

Now, suppose we represent the events in the history of the universe as follows:

Fig. 12.1

The present moment is marked zero, and each moment in the past (such as yesterday or 1500 BC) is one point on the line. If the universe never had a beginning, the left side of the line has no end. Rather, it extends infinitely into the past. If the universe had no beginning, the number of events crossed to reach the present moment would be actually infinite. It would be like counting to zero from negative infinity.

Scientific Evidence That the Universe Had a Beginning While there are two scientific arguments that the universe had a beginning, in my view the philosophical argument is stronger than either and establishes a beginning without needing further support. And while science can provide evidence that the universe had a beginning, as we will see, it cannot explain that beginning, that is, it cannot say what caused it.

One scientific argument for premise 1 derives from *the second law of thermodynamics*, which in one form states that the amount of useful energy in the universe is irreversibly being used up. If the universe were infinitely old, it would have already used up all its useful energy. Since there are many pockets of useful energy (for example, the sun), the universe must be finite in duration. Therefore, there was a beginning, when the universe's useful energy was put into it "from the outside."

If the universe had already existed throughout an actually infinite past, it would have reached an equilibrium state an infinite number of days ago, but it obviously has not done so. Think of it this way: Suppose you woke up in a room so tightly sealed that there was nothing whatsoever, including matter or energy, that could enter or escape the room. Now, suppose you found in the room a warm cup of coffee and a

burning candle. You would know that the room was not beginning-less, that it had not been built and sealed an infinite number of years ago. In fact, you would know that the room could not have been built and sealed more than, say, an hour ago. Why? Because, had it been longer, all the warm, burning objects would have run out of energy and the entire room would be a uniform temperature (it would have reached equilibrium).

The second scientific argument is the classic Big Bang theory, currently the most reasonable and widely respected theory regarding the origin of the universe. It confirms the fact that the space-time physical universe had a beginning. Scientists have discovered evidence that the galaxies are accelerating away from each other. You can picture this by imagining a balloon with dots drawn on it. Each dot represents a single galaxy. Now, as the balloon is blown up, its surface expands and stretches and the dots travel away from each other. This is exactly what is going on in our universe. If you were to reverse time and extrapolate backward, you would reach a point at which time, space, and matter spring into existence at an initial creation event.

But it bears repeating: even though, as shown by these two examples, science can provide evidence that the universe had a beginning, it cannot, even in principle, explain that beginning; that is, it cannot say what caused it.

Evidence That the Beginning of the Universe Was Caused Premise 2—the beginning of the universe was caused—is confirmed by universal experience, with no clear counterexamples. Alleged cases from science where something comes from nothing actually involve one thing coming into existence from something else (e.g., lead from uranium). This premise is also confirmed philosophically by

analyzing the nature of nothingness—a total, complete lack of any being whatever; no properties, events, causal powers, etc. No real thing can pop into existence from nothing.

Evidence That the Cause of the Beginning of the Universe Was Personal Evidence for premise 3—that the cause of the universe was personal—derives from the fact that the ultimate laws of nature, time, space, and matter did not exist earlier than the beginning of the universe. Causes that are physical or that are subject to scientific law presuppose time, space, and matter to exist. But since we are asking what caused time, space, and matter, the cause itself must be something other than each of these. In other words, it must be timeless in order to cause time;[1] it must be nonspatial in order to cause space; it must be immaterial in order to cause matter; it must therefore be supernatural, capable of existing without the natural world and without being subject to the ultimate laws of nature.

The universe's immaterial cause was timeless, spaceless, and had the power spontaneously to bring the world into existence as a first mover, i.e., without changing first to do so (if it had to change before bringing the world into existence, that change, not the act of bringing the world into existence, would be the first event). Such a cause must have genuine free will and, since only persons have free will, it must be a personal creator.

Three Reasons Science Cannot in Principle Explain the Origin of the Universe What I have written thus far is an inadequately brief précis of the kalam argument for God's existence.[2] However, what is also

of interest is that, for at least three reasons, science cannot—even in principle—explain the origin of the universe.

First, science explains one aspect of the universe by appealing to another aspect of the universe, often by connecting the two by subsuming them under a law of nature. For example, we explain the formation of water by appealing to the chemical properties of hydrogen and oxygen, along with some energy-releasing event that caused the two to come together according to these chemical properties. We explain the death of the dinosaurs by appealing to different catastrophic events. In all cases of scientific explanation, one already has to have a universe in existence before scientific explanation, initial conditions, laws of nature, and so forth have something to which they can apply. Scientific explanations presuppose the universe in order for those explanations to be employed in the first place. Thus, *a scientific explanation cannot be used to explain the very thing (the universe) that must exist before scientific explanation can get off the ground.*

Second, scientific explanations apply to ongoing temporal states or changes of states (both are events) of various things according to relevant laws. The moving of the continents, the formation of the solar system, the development of life, the decay of uranium into lead are all events or changes of state that are explained by other events and laws that connect the events. The ongoing event of a gas retaining its pressure at constant volume is explained by the gas's retaining its temperature according to the ideal gas law.

And so scientific explanation presupposes time (events are temporal episodes, and no sense can be given to the idea of a timeless event) and the reality of events. Two things follow from this. For one thing, science will never be

able to explain the first event (the beginning of the universe) because to do so, it would have to appeal to a prior event and a law connecting them. But in this case, the origin of the universe would no longer be the first event; the prior explanatory event would be. But then, to explain this first event, one would need to postulate another prior event, and a vicious regress ensues.

For another thing, since scientific explanations tie one event to another via a law, such explanations presuppose time for those laws to be applicable. Thus, again, science cannot explain the origin of the very thing (time) that must exist before scientific explanations can be proffered in the first place.

Third, coming-into-existence is not a process but an instantaneous occurrence. Consider the process of walking into a room. One starts completely outside the room, then one is 20% into the room, then 30%, and so on, as one passes through the entrance. Finally, one is 100% in the room. But coming into existence from nothing is not a process. It is not as though the entity in question starts off being 100% nonexistent, then is 90% nonexistent and so on until it is 100% existent. Remember, by "90% nonexistent" I don't mean that 10% of the entity fully exists and 90% is completely nonexistent. Rather, I mean that the entire entity is 10% *real*. It's hard to avoid the conclusion that notions like 90% nonexistent are incoherent.

Something either does or does not exist. Period. It follows that, apart from the creative activity of God, there can be in principle no reason, no explanation for why one thing—say, the universe—popped into existence as opposed to another thing—a Honda Civic, a bass's backbone, one half of Mount Everest, or a pair of chicken wings. Science can only be applied to transitions of one thing into another, but coming into existence is not a transition; it is, as it were, a point

action or instantaneous event. So science cannot in principle explain the coming-into-existence of the universe from nothing.

2. Science Cannot Explain the Origin of the Fundamental Laws of Nature Not all laws of nature are equally fundamental. Some can be derived from others. For example, Newton's first law of motion (an object at rest stays at rest, and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force) builds on Galileo's concept of inertia (the tendency of matter to resist change in velocity; objects do not spontaneously change their velocities, which will remain constant unless acted upon by friction).

However, such derivations cannot continue indefinitely. There must be—and it is widely agreed that there are—fundamental or foundational laws of nature. But *the existence and precise nature of these laws cannot be explained by science, since all scientific explanation presupposes them*. As far as scientific explanation is concerned, these foundational laws are simply brute givens to be used to explain other things scientifically but which themselves cannot be explained scientifically.

So, how do we explain the existence and nature of these laws? Where did they come from? There are two major options here: (1) take them as unexplainable, brute entities, or (2) provide a theistic explanation. For many thinkers, myself included, the "unexplainable-brute-entity" option is not a good one. Since the actual brute entity might not have existed, we naturally seek an explanation as to *why* the

contingent entity exists instead of not existing. And the fundamental laws of nature are contingent realities—after all, it is easy to conceive of worlds that have different fundamental laws of nature. So why does our world contain certain fundamental laws instead of others?

This seems like a perfectly permissible question, but some atheists reject the question on the grounds that it assumes *The Principle of Sufficient Reason*, which either begs the question (the only reason to believe it is if one already believes in God) or is just a brute principle that atheists are free to reject. The principle has different formulations, but one is this: *For every contingent existent, there is a sufficient explanation for why it exists as opposed to not existing.*

Theists have responded that the Principle of Sufficient Reason does not, in fact, presuppose the existence of God, and they insist that it is a rational principle that stands behind and justifies the human quest for explanations of why certain things exist and are what they are.

The atheist seems to be committing the *informal taxicab fallacy*. This fallacy occurs when someone hops into a principle or system of reason and uses that principle until he no longer likes the implication of the principle (or system), whereupon he hops out of the principle (or system) and stops using it. Applied to our discussion, we use the principle of sufficient reason all the time (e.g., when your car breaks down, your mechanic assumes there is a reason for why the engine exists in a bad way as opposed to existing in the way it should, so he tries to find that reason), and it has proven itself over and over again. But when we apply the principle of sufficient reason to the existence of the fundamental laws of nature (or, indeed, to the contingency of the universe we live in), the atheist rather arbitrarily stops using the principle because it most

naturally yields a theistic explanation. He or she then jumps out of the taxicab.

The principle of sufficient reason does not apply to necessary beings—beings which, if they do indeed exist, exist in all possible worlds. Necessary beings are beings that could not not-exist. If God exists (and this argument provides evidence that he does), then he is a necessary being and the reason for his existence lies within his own nature as necessary.

But if God is a necessary being and is the creator, how do we explain that the universe he brought about contains laws of nature that are contingent (i.e., that could have been otherwise)? The answer lies in God's free will. Even though he freely brought into existence our universe, he could have refrained from creating at all, or he could have created a different sort of universe with different laws of nature. Thus, the contingency of our laws is explained by the free act of a necessary personal God.

3. Science Cannot Explain the Fine-Tuning of the Universe What do we mean by fine-tuning?[3] Our universe contains various *constants* (like the gravitational constant G in Newton's law of gravity: $F=G\frac{m_1 m_2}{r^2}$) and certain *arbitrary physical quantities* (such as the specific low entropy R^2 level in the universe—the amount of disorder or useful energy to do work in the universe) that are not determined by the laws of nature but, as far as science is concerned, are brute facts that are just there.[4]

Given this information, philosopher William Lane Craig defines "fine-tuning" as follows: By "fine-tuning" one means

that small deviations from the actual values of the constants and quantities in question render the universe life-prohibiting or, alternatively, that the range of life-permitting values is extremely narrow in comparison with the range of assumable values.[5]

These factors are in principle incapable of being explained by science because they are ultimates—brute givens plugged into scientific laws. However, they can be explained quite persuasively by a theistic explanation. To see this, consider the following.

William Dembski has analyzed cases in which it is legitimate to infer that some phenomenon is the result of a purposive, intelligent act by an agent.[6] Among other things, Dembski analyzes cases in which insurance employees, police, and forensic scientists must determine whether a death was an *accident* (no intelligent cause) or was brought about *intentionally* (caused on purpose by an intelligent agent).

According to Dembski, whenever three factors are present, investigators are rationally obligated to draw the conclusion that the event was brought about intentionally:

1. The event was *contingent*, that is, even though it took place, it did not have to happen. No law of nature required that the event happen (unlike in the case of water, which, given the laws of nature, *must* freeze at a certain temperature).
2. The event had a *small probability* of happening.
3. The event is capable of *independent specifiability* (capable of being identified as a special occurrence besides the simple fact that it did, in fact, happen).

These three factors constitute what Dembski and others have called the *design filter*, which is used in various areas of science (e.g., forensic science).

To illustrate, consider a card game of bridge in which two people receive a hand of cards. Let's say one hand is a random set of cards—call it hand A—and the other is a perfect bridge hand dealt to the dealer himself. Now if that happened, we would immediately infer that while A was not dealt intentionally, the perfect bridge hand represents a case of cheating on the part of the dealer. What justifies our suspicion?

First, both hands are *contingent*. Neither one had to happen. There are no laws of nature, logic, or mathematics that necessitate that either hand had to come about in the history of the cosmos. In this sense, each hand and, indeed, the very card game itself, is a contingent event that did not have to take place.

Second, each hand should be equally *improbable*, since both have the same number of cards. The small probability of an event is necessary but not sufficient reason to raise suspicions that the event came about by the intentional action of an agent.

Third, the perfect bridge hand can be *independently specified*, regardless of the fact that it happened to be the hand that came about. But this is not so for hand A. Hand A can be specified as "some random hand or other that someone happened to get." Now that specification applies to all hands whatsoever and does not mark out as special any particular hand that comes about. So understood, A is no more special than any other random deal. But this is not so for the perfect bridge hand (hand B). This hand can be characterized as "a special sort of combination of cards by the rules of bridge" quite independently of the fact that it is the hand that the dealer received.

It is the combination of *contingency* (this hand did not have to be dealt), *small probability* (this particular arrangement of cards was quite unlikely to have occurred),

and *independent specifiability* (according to the rules, this is a pretty special hand for the dealer to receive) that justifies us in accusing the dealer of cheating. This act was done intentionally by an intelligent person.

Similarly, if a wife happens to die at a young age in an unlikely manner even though she is healthy, and if this happens just after the husband takes out a large life insurance policy on his wife a week after proposing to his mistress, then the three factors that justify an intentional act by an intelligent designer are present.

Fine-Tuning and the Existence of God What does all this have to do with the existence of God? In the last several years, scientists have made a discovery so shocking that it played a prominent role in leading to atheist thinker Antony Flew's conversion to belief in God. In fact, in light of the discovery, Flew began to ask, Did the universe know we were coming? He was compelled by the evidence to answer in the affirmative.[7] Of course, the universe is dead matter and, thus, cannot know anything, so Flew actually affirms that it had to be God who knew we were coming.

One of my faculty colleagues, David Horner, took his doctorate in philosophy from Oxford University. One day while he was walking past a lecture hall, he heard one of the world's leading atheists (I won't mention his name) speaking about this discovery. Horner heard him frankly admit that it provides significant evidence for God's existence and he really didn't know how to respond to this new evidence as an atheist.

So, what is the discovery? It is that *the universe is precisely fine-tuned so that life could appear.* More than a hundred independent, hard facts about the universe have

been discovered in the form of basic constants of nature or arbitrary physical magnitudes which are, scientifically speaking, brute facts and for which there is no further scientific explanation (e.g., the force of gravity in the universe, the charge of an electron, the rest mass of a proton, the rate of expansion resulting from the Big Bang). What blows the minds of so many is that, if any single one of these—much less all one hundred!—had been slightly larger or smaller on the order of a billionth of a percentage point or more, then no life could have appeared in the universe. The universe is a razor's edge of precisely balanced life-permitting conditions: If gravity's force were infinitesimally stronger, all stars would burn too quickly to sustain life; if ever so slightly weaker, all stars would be too cold to support life-bearing planets.

- If the ratio of electron to proton mass were slightly larger or smaller, the sort of chemical bonding required to produce self-replicating molecules could not obtain. The same is true for the electromagnetic force in the universe.
- If the strong nuclear force were slightly stronger, then the nuclei essential for life would be too unstable; if it were slightly weaker, no elements but hydrogen would form.
- If the rate of the universe's expansion had been smaller by one part in a hundred thousand million million, the universe would have recollapsed and could not form or sustain life.
- Quantum laws are precisely what they need to be to prevent electrons from spiraling into atomic nuclei.
- If the Earth took more than twenty-four hours to rotate, temperatures on our planet would be too extreme between sunrise and sunset. If the rotation of Earth were slightly shorter, wind would move at a dangerous velocity.

- If the oxygen level on our planet were slightly less, we would suffocate; if it were slightly more, spontaneous fires would erupt.

I could go on and on and on with additional facts. It should be clear why these discoveries shocked scientists and philosophers. These precisely balanced factors are (1) *contingent* (it is easy to conceive of them being different, e.g., that the mass of a proton or the expansion of the universe could have been quite different from what they actually are); (2) extraordinarily *improbable* and balanced to an infinitesimally small degree; and (3) *independently specifiable* (they are exactly what is needed for there to be life).

Regarding this last point, for the longest time scientists thought that these numbers could vary significantly with no impact on whether or not life could appear. But no longer. They now know that life-permitting universes have features that are precisely formulated within a range of billionths of a percentage point from what they actually are in the real world. Thus, the actual values fall within razor-thin ranges that are required for life to appear. These values are special (just as are the rules of a card game) quite independently of the fact that the universe's actual values correspond to them.

Think of it this way: Philosopher of science Robin Collins imagines a scenario where human space travelers arrive on Mars and find a fully functioning, life-sustaining biosphere. When the astronauts enter the Martian biosphere, they find a panel that controls the environment: At the control panel they find that all the dials for its environment are set just right for life. The oxygen ratio is perfect; the temperature is seventy degrees; the humidity is fifty percent; there's a system for replenishing the air; there are systems for producing food, generating energy, and disposing of wastes.

Each dial has a huge range of possible settings, and you can see if you were to adjust one or more of them just a little bit, the environment would go out of whack and life would be impossible.[8]

That's the universe we live in. As noted, there are more than a hundred independent "dials" (constants of nature; hard facts about the universe)—some estimate many, many more—and each has a wide range of alternate settings (values). Yet each dial is exactly set to precisely the correct setting so that life can appear. It's no wonder that theoretical physicist Paul Davies acknowledged, It is hard to resist the impression that the present structure of the universe, apparently so sensitive to minor alterations in the numbers, has been rather carefully thought out. . . . [T]he seemingly miraculous concurrence of numerical values that nature has assigned to her fundamental constants must remain the most compelling evidence for an element of cosmic design.[9]

The Response by Naturalists The main attempt by naturalists to avoid this argument is called the many worlds hypothesis, according to which there is a "world ensemble" containing an infinite number of actual, concrete universes parallel to our own and with which we are incapable of interacting in any way, including scientific means of interaction. Given that each world in the world ensemble would have its own combination of values for its constants and arbitrary physical magnitudes, it is probable that there will be many universes that contain beings capable of observing their own universe. And, thus, it is necessary that our observed universe be one that contains the right combination of constants and

magnitudes because if it did not, we would not be here to debate the question!

In my view, the many worlds hypothesis fails to be plausible. For one thing, since we cannot interact with parallel concrete universes, there is no hard scientific evidence for their existence. Indeed, I can think of no reason to believe in this bizarre assembly of an infinite number of concrete universes other than the fact that it allows one to avoid the theistic alternative.

Further, the many worlds hypothesis is a prime example of a bloated worldview, the very opposite of scientism's prized values of simplicity and elegance. Surely, theism is much simpler and more elegant than this hypothesis.

Moreover, each universe in the ensemble would need a beginning, so the theory does not avoid the *kalam* cosmological argument described above.

Finally, the hypothesis proves too much. While its advocates take the hypothesis to allow one to avoid the conclusion that the universe resulted from an intentional creative action by God, I think it also drives one to avoid believing in other intentional actions by us humans. Consider this: In the infinite ensemble of concrete universes, there will be myriads of universes that contain observing beings. Within that range of universes, there will be universes that contain doubles of us; beings that are indistinguishably similar to us but have a different life (say, my duplicate is a lawyer instead of a philosopher).

Now suppose we have a pot of $500 for the winner of our bridge card game and I am the dealer. On the first deal—surprise—I give myself a perfect winning hand. The others at the table (rightly) accuse me of doing an intentional act (purposely cheating). I respond by noting that, in the Many Worlds Ensemble, there are many, many worlds where we have duplicates, and in many of those, they are playing

bridge, and in each world, players get a different hand on the first deal. We just happen to be in that concrete universe where I got a winning hand on the first deal. Surely such an explanation is bogus, but not if I and my card-playing friends correctly apply the ensemble view to our current situation!

4. Science Cannot Explain the Origin of Consciousness Various features of human persons, consciousness being among them, have provided very serious problems for scientistic naturalism. But consciousness is easily explained, given theism.[10] Consider the following quote from Crispin Wright, one of the world's leading advocates of scientism and naturalism: A central dilemma in contemporary metaphysics is to find a place for certain anthropocentric subject-matters—for instance, semantic, moral, and psychological—in a world as conceived by modern naturalism: a stance which inflates the concepts and categories deployed by (finished) physical science into a metaphysics of the kind of thing the real world essentially and exhaustively is.

> On one horn, if we embrace this naturalism, it seems we are committed either to reductionism: that is, to a construal of the reference of, for example, semantic, moral and psychological vocabulary as somehow being within the physical domain—or to disputing that the discourses in question involve reference to what is real at all.
>
> On the other horn, if we reject this naturalism, then we accept that there is more to the world than can be

> embraced within a physicalist ontology—and so take on a commitment, it can seem, to a kind of eerie supernaturalism.[11]

Wright is right (pun intended). Given naturalism, there is just no place to put consciousness (he calls it the "psychological"), semantic meanings, and so forth. So the naturalist either (1) has to say that these things (e.g., a feeling of pain) just aren't what they seem to be from first-person introspection and, instead, are actually physical things; or else (2) has to deny that they are real in the first place (e.g., consciousness does not exist!). But if we reject naturalism and the strictly physicalist ontology (view of reality) it implies, and accept the commonsense view of these things, we come perilously close to embracing theism.

Why? Well, in the beginning either there was the Logos or else there were the "particles." If you start with brute (unconscious) matter, and then understand the history of the universe to be how they come together according to random collisions and the laws of nature to form larger and more complex rearranged groupings of particles, you will end up with—you guessed it—mere groupings of rearranged particles. If consciousness were to arise in this naturalistic creation account, it would be a case of getting something from nothing. But if you start with God (the Logos), your fundamental being is conscious and there is no difficulty in seeing how God could bestow consciousness on various creatures at his choosing. And this is what Crispin Wright correctly understands.

Reasons Why Science Cannot Explain the Origin of Mental States At least four reasons have been offered for why there is no natural scientific explanation for the existence of mental states (or their regular correlation with physical states): (1)

The uniformity of nature. Prior to the emergence of consciousness, the universe contained nothing but aggregates of particles/waves standing in fields of forces relative to each other. The story of the development of the cosmos is told in terms of the rearrangement of micro-parts into increasingly more complex structures according to natural law. On a naturalist depiction of matter, it is brute mechanical, physical stuff. The emergence of consciousness seems to be a case of getting something from nothing. In general, physicochemical reactions do not generate consciousness—not even one little bit. These reactions do occur in the brain, but brains seem similar to other parts of organisms' bodies (e.g., each one is a collection of cells totally describable in physical terms). How can like causes produce radically different effects? The appearance of mind is therefore utterly unpredictable and inexplicable. This radical discontinuity seems like an inhomogeneous rupture in the natural world. Similarly, physical states have spatial extension and location, but mental states seem to lack spatial features. Space and consciousness sit oddly together. How did spatially arranged matter conspire to produce nonspatial mental states? From a naturalist point of view, this seems utterly inexplicable.

(2) *Contingency of the mind/body correlation.* The regular correlation between types of mental states and physical states seems radically contingent. Why do *pains*, instead of itches, thoughts, or feelings of love, get correlated with specific brain states (C-fiber firings)? We can easily conceive that zombie (a duplicate of us with no consciousness) and inverted-qualia ("qualia" refers to the what-it-is-like, the experiential component of sensations, e.g., the hurt of pain,

the sensation of seeing red) worlds are possible. In an inverted-qualia world, there are people who see red things as blue, but point to them and call them “red,” all the while being in the same brain state as people in *our* world are when they see red; they also see blue things as red. No amount of knowledge of the brain state will help to answer this question. Given the requirement of causal necessitation for naturalistic causal explanations (given the cause, the effect *must* happen), there is *in principle* no naturalistic explanation for either the existence of mental states or their regular correlation with physical states. For the naturalist, the regularity of mind/body correlations must be taken as contingent brute facts. But these facts are inexplicable from a naturalistic standpoint, and they are radically unique compared to all other entities in the naturalist ontology. Thus, it begs the question simply to announce that mental states and their regular correlations with certain brain states are natural facts. As naturalist Terence Horgan acknowledges, “in any metaphysical framework that deserves labels like ‘materialism’, ‘naturalism’, or ‘physicalism’, supervenient facts must be explainable rather than being *sui generis*.”[12]

Since, on most depictions, the theistic God possesses genuine free will, God is free to act or refrain from acting in various ways. Thus, the fact that the existence of consciousness and its precise correlation with matter is contingent fits well with a theistic personal explanation that takes God’s creative action to have been a contingent one. God may be a necessary being, but God’s choice to create conscious beings and to correlate certain types of mental states with certain types of physical states were contingent choices**,** and this fits nicely with the phenomena themselves.

(3) *Epiphenomenalism and causal closure.* Most naturalists believe that their worldview requires that all entities are either physical or at least depend upon the physical for their existence and behavior. One implication of this belief is commitment to the *causal closure of the physical*. On this principle, when one is tracing the causal antecedents of any physical event, one will never have to leave the level of the physical in order to trace those antecedents. Physical effects have only physical causes. Rejection of the causal closure principle would imply a rejection of the possibility of a complete and comprehensive physicalist theory of all physical phenomena—something that no naturalist should reject.

Thus, if mental phenomena are genuinely nonphysical, then they must be *epiphenomena*—effects caused by the physical that do not themselves have causal powers. So it is not the feeling of thirst that causes you to drink water; rather, it is a certain brain state that causes this. On this understanding, the feeling of thirst, even if it is real, cannot cause anything. But epiphenomenalism is false and therefore should be rejected. It is false for at least two reasons. First, is it self-refuting. If our mental states, such as the state of being aware of good reasons for a conclusion, are epiphenomenal, then they do not have a role in our drawing of the conclusion. Thus, any argument that gave reasons for believing in epiphenomenalism would play no role in that belief. So, acceptance of epiphenomenalism would not be based on rational considerations, and it would be self-refuting to give reasons for a view (epiphenomenalism) that, if true, implies that giving reasons for a conclusion is useless! Second, mental causation seems undeniable (e.g., my feeling of thirst causes me to get a drink of water; my beliefs cause me to act in certain ways) and yet, for the naturalist, the mental can be allowed to

have causal powers only if it is in some way or another identified with the physical.

I think that the reliance of some naturalists on the idea of epiphenomenal nonphysical mental entities should be taken as a refutation of naturalism. As naturalist D. M. Armstrong admits, “I suppose that if the principles involved [in analyzing the single, all-embracing spatio-temporal system which is reality] were completely different from the current principles of physics, in particular if they involved appeal to mental entities, such as purposes, we might then count the analysis as a falsification of Naturalism.”[13]

(4) *The inadequacy of evolutionary explanations.* Naturalists are committed to the view that, in principle, evolutionary explanations can be proffered for the appearance of all organisms and their parts. It is not hard to see how an evolutionary account could be given for new and increasingly complex physical structures that constitute different organisms. Perhaps more than anyone, Colin McGinn has defended this idea along with what he takes it to entail, viz., the inability of naturalism to explain genuinely unique emergent properties: Can we gain any deeper insight into what makes the problem of consciousness run against the grain of our thinking? Are our modes of theorizing about the world of the wrong shape to extend to the nature of mind? I think we can discern a characteristic structure possessed by successful scientific theories, a structure that is unsuitable for explaining consciousness. . . . Is there a “grammar” to science that fits the physical world but becomes shaky when applied to the mental world? Perhaps the most basic aspect of thought is the operation of *combination*. This is the way in which we think of complex entities as resulting from the arrangement of simpler parts. There are three aspects to this basic idea: the atoms we start with, the laws we use to combine them, and the

resulting complexes. . . . I think it is clear that this mode of understanding is central to what we think of as scientific theory; our scientific faculty involves representing the world in this combinatorial style.[14]

This combinatorial style may be suited for explaining how complex structural arrangements of neurons could arise, but it is completely inadequate to explain how the property of being a pain—a simple quality that is not a structural arrangement of parts—could take place in a purely physical world.

Some reply that consciousness is simply an emergent property that appears when matter reaches a suitable level of complexity. But "emergence" is just a name for the problem: how we get simple properties of a totally new thing (consciousness) by simply spatially rearranging physical parts. It is not a solution. Moreover, the emergent-property view suffers from what is called a *sorites* problem.[15] Consider the idea of the appropriate complexity of matter that must be present if the emergent property (e.g., properties of consciousness) is to arise. This complex structure is composed of literally billions and billions of atoms and molecules. Now, suppose we removed just one single atom from the proper complex structure. Would consciousness emerge under this condition? Surely it would, because removing one single atom among billions would amount to nothing. What about removing another single atom? The same response must be given. Now, no one thinks this process of removal could continue forever. If you got to the point that, instead of a brain, you had only four atoms left, there would be an insufficient structure for consciousness.

If all this is right, then a disastrous conclusion follows. Somewhere between the removal of the first atom and the place where only four atoms are left, we have a situation

such that, at that specific place in the process, if one were to remove a single additional atom, no consciousness could be present. But how could such a small cause (the presence or absence of a single atom) have such a huge metaphysical effect (the presence or absence of consciousness)? It could not, and since the emergent-property view seems to imply that it could, we should reject the emergent-property view. As Crispin Wright and D. M. Armstrong noted, the existence of irreducible consciousness falsifies naturalism and provides strong evidence for theism.[16]

5. Science Cannot Explain the Existence of Moral, Rational, and Aesthetic Objective Laws and Intrinsically Valuable Properties

Most people acknowledge the existence of objectively true laws in morality, rationality, and aesthetics. Examples in *morality* are "It is wrong to torture babies for fun" and "One ought to pursue love and kindness and avoid racist bigotry." If you violate one of these laws, you have done something immoral. Examples in *rationality* are the laws of logic, principles of evidence evaluation in jury trials, and statements like "If a belief coheres well with other reasonable beliefs you hold, that increases its chances of being true." If you violate one of these laws, you have done something irrational. In *aesthetics*, there are principles of objective beauty; e.g., if you want the painting to be beautiful, pay attention to symmetry and color combinations. If you

violate one of these laws, you have done something ugly.

The problem for scientism is that science is descriptive, not prescriptive; science attempts to describe what *is* the case, but it cannot prescribe what *ought* to be the case. Thus, science must remain silent when it comes to normative laws and principles. As one of the leading philosophers of evolutionary biology, atheist Michael Ruse, puts it, Morality is a biological adaptation no less than are hands and feet and teeth. Considered as a rationally justifiable set of claims about an objective something, ethics is illusory. I appreciate that when somebody says "Love thy neighbor as thyself," they think they are referring above and beyond themselves. Nevertheless, such reference is truly without foundation. Morality is just an aid to survival and reproduction . . . and any deeper meaning is illusory.[17]

Ruse's point applies with equal force to rationality and aesthetics. However, if there is a virtuous, good God, then the moral, rational, and aesthetic duties he imposes on us will be objectively true (that is, true independent of what humans think or believe), conducive to prescriptively good human flourishing, and real whether one believes in them or not.

Besides rules and principles, there are also intrinsically good, valuable states of affairs and things in the world. A human person has deep, intrinsic value, and all human persons have equal, intrinsic value and rights precisely as human persons. Certain states of the mind are intrinsically rational and are states one should seek if he or she desires to be a normatively rational thinker. For example, if one's mind contains the complex thought "If consciousness is irreducible and real, then physicalism is false; consciousness is irreducible and real; therefore, physicalism is false," this is a rational state of affairs for a mind to be in. Again, if one

had the true belief that “the physical, circumstantial, and eyewitness evidence against the defendant is overwhelming, so I find him guilty,” that person is in an intrinsically rational state of mind. Likewise, certain things are intrinsically beautiful, e.g., sunset over Maui, or snow-covered mountains.

Now if the universe began with a being who was himself the bearer of intrinsic goodness, rationality, and beauty, then there is no problem with how these things could exist or from where they came. However, if scientism is true, the entire history of the universe is a story of how strictly physical things (strings, waves, particles, etc.) with strictly physical properties (mass, charge, size, location, and so forth) combined according to the laws of nature to form other strictly physical things with strictly physical properties. There is no need or room for intrinsic, normative value properties—whether moral, rational, or aesthetic—to come to be. As the late atheist philosopher J. L. Mackie admitted, the emergence of moral properties would constitute a refutation of naturalism and evidence for theism: “Moral properties constitute so odd a cluster of properties and relations that they are most unlikely to have arisen in the ordinary course of events without an all-powerful god to create them.”[18] Yea, verily, and amen!

Conclusion

So here we have five distinct phenomena that science simply cannot explain, even in principle. They do, however, fit quite nicely with theism. I conclude that these features support theism and provide strong evidence against scientism.

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1. Without time, there was no "earlier than" the universe for them to exist in; without the universe, God exists timelessly.
2. For fuller developments of this argument, see J. P. Moreland, *Scaling the Secular City* (Grand Rapids, MI: Baker, 1986), chapter 1; Douglas Groothuis, *Christian Apologetics* (Downers Grove, IL: InterVarsity Press, 2011), 214–234; William Lane Craig, *Reasonable Faith: Christian Truth and Apologetics*, 3rd ed. (Wheaton, IL: Crossway, 2008), 111–156.
3. I am indebted to William Lane Craig's excellent discussion of this topic in *Reasonable Faith*, 158–159.
4. For a list and nice explanation of these constants and physical quantities, see Hugh Ross, *The Creator and the Cosmos*, 3rd rev. and expanded ed. (Colorado Springs: NavPress, 2001), 145–167.
5. Craig, *Reasonable Faith*, 158.
6. William Dembski, *Intelligent Design* (Downers Grove, IL: InterVarsity Press, 1999).
7. Antony Flew, *There Is a God: How the World's Most Notorious Atheist Changed His Mind* (New York: HarperCollins, 2007), chapter 6.
8. Robin Collins, "The Evidence of Physics: The Cosmos on a Razor's Edge," interview in Lee Strobel, *The Case for a Creator: A Journalist Investigates Scientific Evidence That Points to God* (Grand Rapids, MI: Zondervan, 2004), 130.
9. Paul Davies, *God and the New Physics* (New York: Simon & Schuster, 1983), 189.
10. See J. P. Moreland, *The Recalcitrant Imago Dei* (London: SCM Press, 2009).
11. Crispin Wright, "The Conceivability of Naturalism," in *Conceivability and Possibility*, ed. Tamar Szabo Gendler and John Hawthorne (Oxford: Clarendon, 2002), 401. The paragraph breaks are mine.
12. Terence Horgan, "Nonreductive Materialism and the Explanatory Autonomy of Psychology," in *Naturalism*, ed. Steven J. Wagner and Richard Warner (Notre Dame, IN: University of Notre Dame Press, 1993), 313–314.
13. D. M. Armstrong, "Naturalism: Materialism and First Philosophy," *Philosophia* 8 (1978): 262.
14. Colin McGinn, *The Mysterious Flame* (New York: Basic Books, 1999), 55–56, cf. 54–62, 90, 95.
15. As first proposed by the ancient Greeks, a *sorites* problem occurs when you have something with a lot of parts, say, a full head of hair made up of a large number of individual hairs, and you remove one part and ask if a big change has occurred—e.g., is the person's head now bald? The answer will be no. Then you repeat this process over and over again, such that it seems you never have the big change occur (the head never gets bald). This is because it surely seems that the removal of just one single hair at each stage of removal will not be significant enough to bring about the big change of going from not being bald to being bald. But, eventually, that change does occur and the head is bald. Something is wrong here, and this is what the *sorites* problem is. What do we make of cases like this?
16. For a technical presentation of the argument for God's existence from the fact of conscience, see J. P. Moreland, *Consciousness and the Existence of God* (New York: Routledge, 2008).
17. Michael Ruse, "Evolutionary Theory and Christian Ethics," in *The Darwinian Paradigm* (London: Routledge, 1989), 262–269.
18. J. L. Mackie, *The Miracle of Theism* (Oxford: Clarendon, 1982), 115. Cf. J. P. Moreland and Kai Nielsen, *Does God Exist?* (Buffalo, NY: Prometheus, 1993), chapters 8–10.

13

Methodological Naturalism, Theistic Evolution, and Intelligent Design

Before we turn in the next chapter to how science and Christianity should be integrated, I want to focus in this chapter on one *bad* way to put the two of them together: namely, the strategy of methodological naturalism.

Some of the leading *critics* of methodological naturalism today are the proponents of intelligent design. Many of its leading *defenders*, on the other hand, are theistic evolutionists. Both "theistic evolution" and "intelligent design" are often undefined or misdefined, so we need to begin by clarifying what and whom we are talking about.

Intelligent Design The intelligent design movement is an entire approach to science and, as such, it goes far beyond the topic of evolution. But when it comes to evolution, intelligent design proponents make at least three claims, although we will be focusing mostly on the third: *1. The blind watchmaker thesis is wrong.*

Although some intelligent design advocates provide critiques of and alternatives to the *thesis of common descent* (all living organisms are descended from a single common primordial ancestor), the key target of the intelligent design hypothesis is the *blind watchmaker* thesis.

The blind watchmaker thesis maintains there is no scientific evidence for appealing to an intelligent designer in order to explain the history of life and the existence and nature of living things and their parts. Rather, non-intelligent, purposeless naturalistic processes are fully adequate to explain all the relevant scientific facts. As Richard Dawkins puts it, the so-called "watchmaker" is "blind"—"it does not see ahead, does not plan consequences, has no purpose in view." Therefore, "we don't need to postulate a designer in order to understand life, or anything else in the universe."[1] Advocates of intelligent design demur and believe that intelligent design is a scientific model superior to the blind watchmaker thesis.

2. Intelligent design is a science.

Proponents of intelligent design argue that the facts that justify an inference to an intelligent designer, and indeed the very inference itself, are properly construed as being within the domain of science.

3. Methodological naturalism should be rejected.

Proponents of intelligent design reject *methodological naturalism,* roughly, the idea that, while doing science, scientists must limit themselves to strictly naturalistic, materialistic explanations. In this approach, scientists are prohibited from offering explanations that make reference to intelligent design or cases of agent causes or divine action, or that make any reference to theology in scientific discourse.

Theistic Evolution *Theistic evolutionists* are theists who believe that, when it comes to scientifically detectable empirical evidence, the processes by which evolution occurred are blind, purposeless, naturalistic processes with no goal-directed activity or supernatural intervention, but that, in some fairly unclear sense, God "guided" the process—but that this involvement by God is not detectable.

Theistic evolutionists reject *philosophical naturalism* (the belief that the natural world is all there is), believing instead in the existence and actions of God, angels, and the like. Nevertheless, while doing science, they are willing to lay their theism aside. For example, they would say, in describing how two charged electrodes separate hydrogen and oxygen gas when placed in water, the "God hypothesis" is both unnecessary and out of place. The physical universe—the world of atoms, subatomic particles, and things made of atoms—is the proper *object* of scientific study, and naturalism is the proper *method* for pursuing that study.

The Revival of Methodological Naturalism
Though methodological naturalism is nothing new, it has experienced something of a revival in recent years. In the early 1980s, atheist philosopher Michael Ruse claimed that "even if Scientific Creationism were totally successful in making its case as science, it would not yield a *scientific* explanation of origins. Rather, at most, it could prove that science shows that there can be *no* scientific explanation of origins."[2] Ruse opines, "The Creationists

believe the world started miraculously. But miracles lie outside of science, which by definition deals only with the natural, the repeatable, that which is governed by law."[3] The National Academy of Science put it quite simply: "The statements of science must invoke only natural things and processes."[4]

Meanwhile, Christian scholar Paul de Vries announced that the goal of natural science "is to place events in the explanatory context of physical principles, laws, fields."[5] Thus, the goal of natural science is to explain contingent natural phenomena strictly in terms of other contingent natural phenomena; any appeal to personal causes and actions of human or supernatural agents is disallowed. As de Vries goes on to say, "A 'God hypothesis' is both unnecessary and out of place within natural scientific explanations."[6] A scientist may be able to measure the effects of the actions of an agent (for example, the velocity of a ball thrown by a baseball pitcher), but the free will mental act of the pitcher himself is outside the domain of *physical* science. In this case, methodological naturalism would require that science find a purely physical cause for the ball's velocity—it was caused by physical states in the brain, according to physical laws.

The most straightforward treatment of methodological naturalism—whether articulated by Christians or non-Christians—is as a blanket prohibition upon all theological claims within scientific research and discourse. Science, therefore, should be silent on matters divine.

The Divide between Intelligent Design and Theistic Evolution What separates intelligent design theory and theistic evolution is not first

and foremost metaphysical (having to do with reality), since both affirm a creator. Rather, the fundamental divide between the two camps is epistemological (having to do with knowledge). The disagreement is whether there is *objective, empirically detectable, scientific evidence* of God's design in biological history or phenomena.

Why Christians Should Reject Methodological Naturalism What should we make of methodological naturalism as a philosophy of science? I believe Christians (and even non-Christians) should reject methodological naturalism for two reasons, one negative and one positive.

1. The case for methodological naturalism has not been made.

Negatively, we should reject methodological naturalism because its advocates have failed to make their case. They rely on a *line of demarcation* between science and nonscience that consists in stating a set of necessary and/or sufficient conditions for something to count as science.

What do we mean by "necessary conditions" and "sufficient conditions"? Think about what is required to produce fire. Oxygen is a "necessary" condition for fire (it is required for combustion to occur), but oxygen alone can hardly be a "sufficient" condition (or else there would be fire every time oxygen was present!). When you have a "sufficient condition," that is all that is required—its presence is sufficient for the result to take place. So when

there is the right combination of heat, fuel, and oxygen, a fire has to happen.

Methodological naturalists say that we can come up with certain conditions that are both necessary and sufficient for "science" to be practiced. Once those features are identified, we can draw a big bright red line down the middle of the page: everything that has those features is on one side and is labeled "science," and everything that doesn't match that combination of characteristics is "something other than science." By determining where the line of separation should lie, a definition of science emerges:

Science	**Not Science**
Conditions for science are met	Conditions for science are not met

Table 13.1

There is just one problem with that proposal: *no one has ever been able to draw such a line*. It simply does not exist.[7] Consider the following criteria that have been offered throughout the years as conditions for something to count as science: focused on the natural or physical world guided by natural law explainable by reference to natural law empirically testable held tentatively falsifiable measurable or quantifiable involves predictions repeatable But not one of these conditions individually, and no set of them collectively, is necessary or sufficient for counting as science. There are examples of science that do *not* have a particular one of the criteria in question (thus the criterion is not a *necessary* ingredient of science) and there are examples of *nonscience* that *do* have the criterion (thus the criterion is not *sufficient* for defining science).

For example, must science be held *tentatively*, not as the last word? This is a strange proposal, for it is irrelevant to the definition of science itself, and is about the inner conscious states of scientists rather than their competing views. Besides, some scientists hold their views

dogmatically, while some theologians hold *their* views tentatively. So this criteria really tells us nothing about science and its definition or conditions.

What about *quantifiability*? Is *measuring* a condition of something a requirement of legitimate science? It's hard to see how this would be so. There are scientific endeavors that do not involve quantifying things (e.g., certain theories about viruses and how they work; theories of how the dinosaurs died). And on the other hand, other disciplines, such as literary studies, have quantifiable aspects though they are not considered science proper (e.g., quantitative treatments of word frequency in determining how an author uses a word).

Is *reference to natural law* a key part of genuine science when it comes to explaining why something occurred? Again, it is difficult to take this seriously as a compelling criteria when there are examples in science of explanations that do not require an appeal to natural law—especially in historical science, where reference is made to a single causal event to explain something (e.g., in archaeology). And on the other side, other disciplines make reference to natural laws (not scientific laws, but laws that are natural aspects of the world and characterize non-supernatural features of the world), such as in the areas of metaphysics, morality, mathematics, and logic.

And on it goes.

2. Methodological naturalism is internally inconsistent.

My first argument, then, for why methodological naturalism should be rejected is negative: its advocates have failed to give us a compelling reason to accept it. In order for methodological naturalism to be true, there would need to be a clear line of demarcation telling us what is science and

what is not; but since such a line cannot be established, we should reject methodological naturalism. My second argument looks at what methodological naturalists advocate, which I judge to be internally inconsistent.

According to methodological naturalists, explanations in the realm of science can refer only to natural objects and events. Attributing an event to the personal choices and actions of an intelligent agent is considered to be outside the realm of science. In reality, though, several areas of science employ explanations of various phenomena that appeal to the actions, motives, beliefs, and intentions of an intelligent agent—rather than appealing to natural, physical processes and laws.

Consider the following fields of scientific study: SETI (the Search for Extra-Terrestrial Intelligence) archaeology forensic science neuroscience psychology sociology

Scientists in each of these disciplines use personal agency and various internal states of agents (desires, willings, intentions, beliefs) as part of their description of the causal entities (e.g., personal agents) cited in their explanations of the things they try to explain. To give but one example, neuroscientists must ask their study subjects to report their conscious states while brain states are being monitored, since the scientist does not have access to the subject's private mental states. Therefore, *agent action* and *the intention to report one's mental state honestly* are essential parts of neuroscientific methodology. This is especially true in the historical sciences (which focus on events in the past —which are not repeatable, by the way) as opposed to the empirical sciences (which focus on regular, repeated phenomena).

If science can appeal to personal agency to explain certain phenomena, there is in principle nothing nonscientific about appealing to divine agency to explain

the origin of the universe, first life, and human persons. At the very least, such an appeal cannot be faulted as nonscientific on the grounds that it involves an agent-causal explanation (i.e., an agent intentionally caused the incident and it wasn't an accident) and not an explanation in terms of some natural law like the law of gravity. If science can make an appeal to *small* agents to explain something, I don't know why it can't make an appeal, when warranted, to a Big Agent in the same way.

Moreover, such an appeal to divine agency may be especially (but not solely) appropriate where there are theological reasons to believe that God acted through primary and not secondary causes. (A *primary divine cause* would be when God directly intervenes and produces an effect [say, turning water into wine]. A *secondary divine cause* would take place when God employs the laws of nature to accomplish an effect [say, turning grapes into wine].) It may be objected that such appeals are permissible in the human sciences but not in the so-called natural sciences like biology or paleontology. But this response is clearly begging the question, a logical fallacy that merely assumes what it purports to prove. If someone tries to define and classify examples of "natural science" by smuggling methodological naturalism into the definition, then of course methodological naturalism will come out on the other side. The objector instead would need to use neutral ostensive definitions of natural science in order to make the refutation, and I do not believe this can be done.

The response also distorts the history of at least some of the natural sciences. Scientists from Charles Darwin (1809–1922) to the Harvard paleontologist Stephen Jay Gould (1941–2012) have clearly seen that *theological ideas can have scientifically testable implications*. For example, Darwin plainly stated in the introduction to the first edition

of *On the Origin of Species* that one of his chief goals was to argue that special creation is "erroneous."[8] Throughout the *Origin*, his "one long argument" for evolutionary theory repeatedly engaged in an empirical battle with this theological rival.[9] Darwin's point in all this was that, while creationism was, indeed, a science with empirically testable implications, those implications had been scientifically falsified and should be replaced by his own theory as a better scientific explanation of the data.

Further, many contemporary scientists—both theistic evolutionists and others—rely upon claims about God's nature and ways in their scientific case for evolution. For example, they may argue that if God had been the designer, then various organisms and their parts (e.g., the Panda's thumb) would have been much better and much more efficiently designed than they are. Thus, God-as-designer is falsified by these cases, and the cases confirm evolutionary theory. Gould is one of the chief employers of this sort of argument.[10]

The point here is not to evaluate the strength of such arguments or to examine the appropriateness of the model of God as designer that they utilize. Rather, the point is to show that the history of biology and paleontology include arguments of this sort time and again. And such arguments are not merely rhetorical devices but substantive claims that show how *theological ideas, adequate or inadequate, can have implications for scientific explanation, evaluation, and testing*. Cases of alleged "bad or inefficient design" are used by scientists to argue that these cases falsify the notion of a god, because if such a god existed, surely he could do a better job than he did in the bad, inefficient cases.

Well, if a theological model of God can be used to *falsify* that model, why can't a different theological model be used

to provide scientific *evidence* for that model of God? Advocates of methodological naturalism can't have it both ways. On the one hand, they claim that *science must adopt methodological naturalism and that theological propositions are entirely outside the range of science*. On the other hand, for more than 150 years scientists have used *theological models of an incompetent, inept designer to test against the evidence of biology and paleontology to show that the evidence demonstrates that a designer does not exist*. This sounds like a "reverse intelligent design" to me.

Argument for Methodological Naturalism and against Intelligent Design: The God-of-the-Gaps Charge against Intelligent Design To close out this chapter appropriately, there is one argument that serves double duty to which I should respond—it provides an argument for methodological naturalism and against intelligent design. Some critics object that intelligent design models utilize a strategy that can be called the "God-of-the-gaps" approach, which is an intellectually inappropriate move. Thus, one should stick to methodological naturalism and abandon intelligent design in order to avoid the God-of-the-gaps charge.

This argument usually takes the following form: (1) God acts only when there are gaps in nature, (2) God is appealed to merely to fill up gaps in our scientific knowledge and cover our ignorance of naturalistic mechanisms, (3) these gaps are used in apologetic, natural theology arguments to support Christian theism, (4) scientific progress is making these gaps increasingly rare, and thus, (5) this strategy is not a good one.

Several things may be said against this criticism.

First, *within the intelligent design model, God's causal activity is clearly not limited to gaps*. God constantly and actively sustains and governs the universe at all times. Nature is not autonomous. Moreover, intelligent design theory need not have *any* apologetic aim at all. A Christian theist (or a Muslim, for that matter) may simply believe that he or she should consult all that we know or have reason to believe is true, including theological beliefs, in forming, evaluating, and testing scientific theories and in explaining scientific phenomena. And even if someone uses an intelligent design approach with apologetic intentions, intelligent design advocates do not limit their apologetic case to gaps. The model merely recognizes a distinction between primary and secondary causes and goes on to assert that at least the former could have scientifically testable implications irrespective of the apologetic intentions of such a recognition.

Second, *the model does not attempt to explain things in light of God and his activities in order to cover our ignorance, but only when positive, good theological, philosophical, and especially scientific reasons are present*. Examples would be cases where certain theological or philosophical reasons would cause us to expect a discontinuity in nature where God acted via primary causation or in cases where some doctrine such as original sin sheds light on some psychological theory regarding human behavior. And intelligent design theory clearly is justified in appealing to an agent cause—God—instead of a purely material cause—when the effect being explained satisfies the design filter (the effect is highly improbable, and the effect is independently specifiable; it can be picked out as a special effect besides the simple fact that it took place).

Third, *even if the gaps in naturalistic scientific explanations are getting smaller, this does not prove that there are no gaps at all*. It begs the question to argue that just because most alleged gaps turn out to be explainable in naturalistic terms, without gaps at that level of explanation, then *all* alleged gaps will turn out this way. After all, what else would one expect of a gap but that there would be few of them? Gaps due to primary divine agency are miracles that are in the minority for two reasons: First, we have already seen that God's usual way of operating is through secondary causes and that primary causal gaps are God's extraordinary, unusual way of operating, and that therefore, by definition, these primary actions of God will be few and far between. Second, the evidential or sign value of a miraculous gap arises most naturally against a backdrop where the gaps are rare, unexpected, and have a religious context (e.g., there are positive theological reasons to expect their presence).

In addition, it is a mistake to think that the only phenomena that intelligent design advocates think is best explained by an intelligent designer are ones that exhibit a gap of some sort and result from a direct, miraculous divine intervention. Intelligent design advocates primarily look at the phenomenon itself to see if it passes the design filter. If it does, the phenomenon is best explained by an intelligent designer even if that phenomenon resulted from God guiding a process without direct intervention that led up to that phenomenon. Theistic evolutionists, however, claim that when God uses natural processes (which is all he does in the development of life), there can be no evidence of his employment of such.

On the other hand, intelligent design advocates claim that, even without direct intervention, if the product of a "natural" process results in a phenomenon that passes the

design filter—a filter used in other areas of science, such as forensic science—then the best explanation is an intelligent designer. So even if gaps are getting smaller, this does not impact the evaluation of intelligent design, because intelligent design does not limit its inferences to a designer to gap-like situations.

Fourth, the distinction between "empirical" and "historical" science is helpful for answering the God-of-the-gaps problem. *Empirical* science is a nonhistorical approach to the world that focuses on repeatable, regularly recurring events or patterns in nature (e.g., the relationship between pressure, temperature, and volume in a gas). By contrast, *historical* science focuses on past singularities that are not repeatable (e.g., the origin of the universe; first life; the origin of various kinds of life).

Advocates of this distinction claim that appealing to God's primary causal activity is legitimate in historical science even if not in empirical science because the former deals with cases where, theologically speaking, God's primary causal activity is to be found, while the latter deals with God's *secondary* causal activity. Now, it could be argued that most cases of where God was appealed to as a cover for our ignorance of a gap were cases involving empirical science—e.g., chemical change, the development of weather patterns—not historical science. Thus, when those gaps are filled by naturalistic mechanisms, the conclusion to draw is not that God should never be appealed to as an explanatory notion of some scientifically discoverable phenomenon, but rather that the notion of a primary causal act of God should be limited to cases in historical science precisely because of the differences between primary/secondary causation that is captured in the historical/empirical science distinction.

Fifth, according to intelligent design advocates, one can use science to discover the products of intelligent design without having any idea how those products came about. For example, an archaeologist can know that an artifact he discovered was intelligently designed to be used in religious activities, even though he has no idea how the artifact was made. Critics who raise a "God-of-the-gaps" objection against intelligent design fail to take into account this feature of intelligent design theory: the inference to an intelligent designer can be the best explanation of some phenomenon even if no mechanism for how the designer made that phenomenon is part of the explanation.

Finally, intelligent design theory differs from any form of creation science in this way: Creation science proponents use biblical data to form theories and then attempt to test them empirically. Intelligent design theory, on the other hand, makes no reference to a sacred text like the Bible or to theological teachings. Instead, by using the intelligent design filter, intelligent design advocates believe that they can and have discovered scientific data that is best explained by an intelligent designer—the origin of the universe, life, consciousness, cases of irreducible complexity, and so on. It is the use of scientific evidence and the scientifically employed design filter, not biblical or theological teaching, that distinguishes intelligent design theory from creation science.

It would seem, then, that the God-of-the-gaps charge is inadequate to motivate an abandonment of intelligent design and a return to methodological naturalism.

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1. Richard Dawkins, *The Blind Watchmaker* (New York: Norton, 1986), 21, 147.
2. Michael Ruse, *Darwinism Defended* (Reading, MA: Addison-Wesley, 1982), 322.
3. Ibid. Cf. David Hull's review of Phillip Johnson's *Darwin on Trial*, in *Nature* 352 (August 8, 1991): 485–486.
4. National Academy of Science, *Teaching about Evolution and the Nature of Science* (Washington, DC: National Academy Press, 1998), 42.

5. Paul de Vries, “Naturalism in the Natural Sciences: A Christian Perspective,” *Christian Scholar’s Review* 15, no. 4 (1986): 388.
6. Ibid., 389.
7. See the chapters by Stephen Meyer and Stephen Dilley in *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*, ed. J. P. Moreland, Stephen C. Meyer, Christopher Shaw, Ann K. Gauger, and Wayne Grudem (Wheaton, IL: Crossway, 2017). For detailed criticisms of attempts to draw such a line of demarcation, see J. P. Moreland, ed., *The Creation Hypothesis* (Downers Grove, IL: InterVarsity Press, 1994), chapters 1 and 2; Stephen C. Meyer, *Darwin’s Doubt* (New York: HarperCollins, 2013), chapter 19; William Dembski, *Intelligent Design: The Bridge between Science and Theology* (Downers Grove, IL: InterVarsity Press, 2002).
8. Charles Darwin, *On the Origin of Species*, 1st ed. (London: John Murray, 1859), 6.
9. E.g., Darwin, *On the Origin of Species*, 1st ed., 55–56, 185–186, 242–243, 275–276, 354–355, 372, 393–398, 453–454.
10. See Stephen Jay Gould, *Ever Since Darwin* (New York: W.W. Norton, 1977), 91–96; Gould, *The Panda’s Thumb* (New York: W.W. Norton, 1980), 20–21, 24, 28–29, 248; Gould, *Hen’s Teeth and Horse’s Toes* (New York: W.W. Norton, 1983), 258–259, 384; Gould, *The Structure of Evolutionary Theory* (Cambridge, MA: Harvard University Press, 2002), 104; Gould, “Evolution and the Triumph of Homology, Or Why History Matters,” *American Scientist* 74, no. 1 (1986): 60–69, especially 63. I owe the insights and sources in notes 8–10 to Stephen Dilley.

14

The Importance of Integrating Christianity and Science

Throughout this book I have offered several arguments to convince you that scientism is false. But what I have not yet done is explain how we *are* to think of the relationship between Christianity and science. Can the two be integrated? If so, how?

Before we start our exploration of these topics, I want to give you something to ponder, based on my experience of more than five decades of teaching at the graduate level and reading deeply and widely on the nature of science and the study of Christian theology and philosophy. I would estimate that about *95% of science and theology are cognitively irrelevant to each other*. For example, as a Christian, it just doesn't matter to me whether a methane molecule has four or fourteen hydrogen atoms. Similarly, debates among Christians about the existence and nature of the spiritual gifts don't seem to be relevant to chemistry. Both are important issues to get right. But the science doesn't really help or affect the theology of spiritual gifts, and the theology doesn't affect the number of atoms in a molecule.

In that other 5% or so of science, there is direct interaction with Christian doctrine. Within this category, I would say that *3% of science provides further evidential*

support for Christian teaching (as opposed to evidence *against* it). For example, the Big Bang theory and the Second Law of Thermodynamics provide dramatic scientific confirmation of the Bible's unique premodern teaching that there was a beginning to the cosmos. Other examples include the fine-tuning of the universe, biological information, archaeological confirmation of Scripture, and psychological discoveries such as the realization that gratitude is crucial for a flourishing life.[1]

That leaves *2% of current scientific claims that may seem to undermine Christian theology*. What is interesting to me is that, as far as I can tell, little or none of this counts against the existence of God or the truth of Christianity's core. Rather, most of it counts against biblical inerrancy and current interpretations of specific texts. In fact, interpretations of Genesis 1–11 account for much of the conflict between science and Scripture, while various archaeological issues—e.g., the alleged absence of evidence for Israel's exodus from Egypt—could conceivably count against other specific biblical passages.

As I have said elsewhere, I not only believe that biblical inerrancy is true, I also think it is an important doctrine that we can believe with rational confidence.[2] But when people talk about a "conflict" between theology and science, it is critical to determine the exact location of the difficulties. Science has done more to confirm the Christian God's existence than to undermine it, and science has provided little or no evidence *against* belief in theism. Science *has*, however, raised challenges to various biblical texts, and Christians need to take those challenges seriously.

Areas Where Science and Theology Do or Do Not Relate

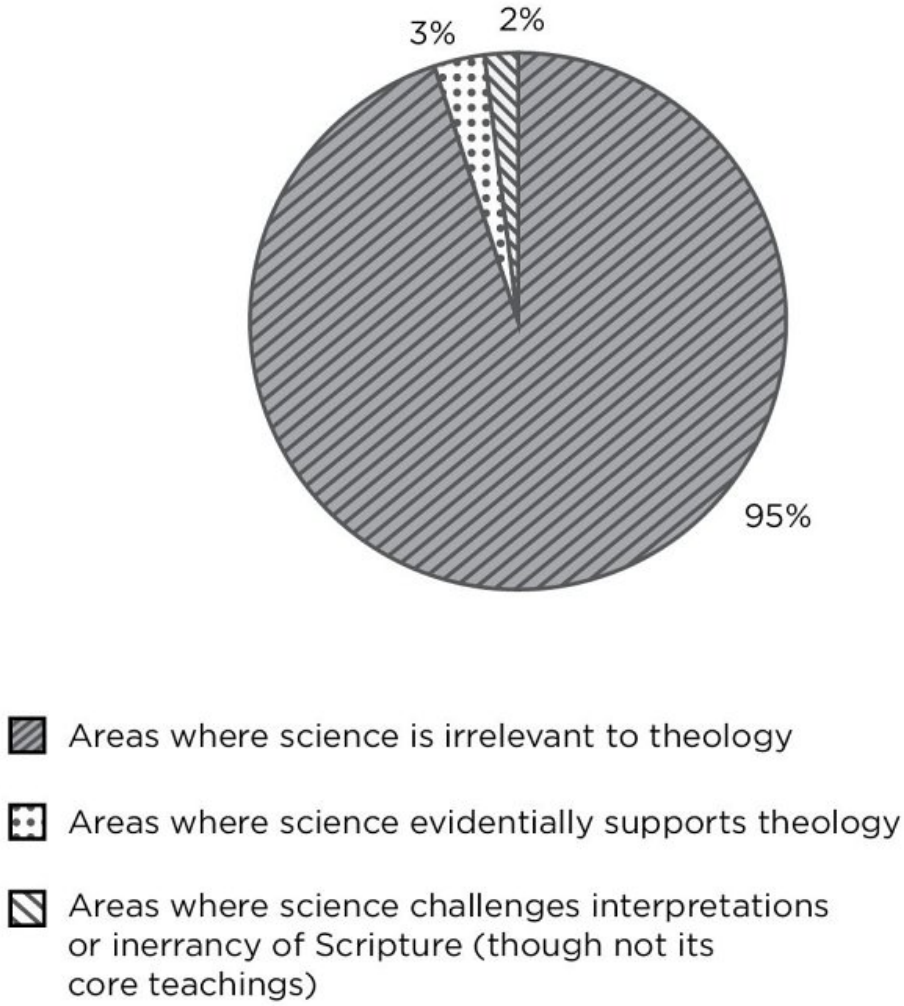

Fig. 14.1

But I trust that this perspective on the nature and limits of the "tension" between Christian theism and good science puts into perspective the kind of irresponsible hyperbole offered by the late William Provine, professor of biological sciences at Cornell University, who offered to summarize his "views on what modern evolutionary biology tells us loud and clear": There are no gods, no purposes, no goal-directed forces of any kind. There is no life after death. When I die, I am absolutely certain that I am going to be dead. That's the end for me. There is no ultimate foundation

for ethics, no ultimate meaning to life, and no free will for humans, either.[3]

This statement is patently absurd. If Provine wants to hold this as an opinion, a personal and private belief even in the face of much rational evidence to the contrary, that's fine. But he cannot appeal to the authority of science as if that settles the case for these nonscientific conclusions. Evolutionary biology does not even address these topics, much less provide evidence for them. Not only is Provine wrong on the merits, but he does not even seem to recognize the self-contradictory nature of his statements. He says there are "no purposes," and yet he has a purpose in publishing this, namely, to convince us that he is right. And although he denies the reality of ethical foundations and of human free will, I'll bet he thinks he said this statement freely and had a moral duty to do so.

Or consider this statement from Steven Pinker, professor of psychology at Harvard University: [T]he findings of science entail that the belief systems of all the world's traditional religions and cultures . . . are factually mistaken. . . . We know that the laws governing the physical world (including accidents, disease, and other misfortunes) have no goals that pertain to human well-being. There is no such thing as fate, providence, karma, spells, curses, augury, divine retribution, or answered prayers. . . . [4]

Some people are intimidated when they read a conclusion like this, coming from a world-class scholar at a prestigious university. But at the end of the day, no one wins a debate based on the number of degrees behind his name or the position of cultural authority he occupies. He has to make arguments, just as the rest of us do. So if Pinker really believes that the findings of science can invalidate the Christian worldview, then he should set forth the alleged factual errors as premises and produce a valid conclusion

that entails the denial of the existence of God, the resurrection of Jesus, and so forth. I am afraid we will be waiting for a very long time to see such a syllogism.

Integration: Conceptual and Personal The word “integration” means to form or blend into a whole, to unite. We humans naturally seek to find the unity that is behind diversity and, in fact, coherence is an important mark of rationality.

As it relates to our topic, there are two kinds of integration: conceptual and personal.

In *conceptual* integration, one’s rationally justified theological beliefs, especially those derived from careful study of the Bible, are blended and unified with important, reasonable ideas from sources that are extrabiblical (e.g., biology) into a coherent, intellectually satisfying Christian worldview. As Augustine wisely advised, “We must show our Scriptures not to be in conflict with whatever [our critics] can demonstrate about the nature of things from reliable sources.”[5] Given scientism’s current hegemony, Augustine’s advice applies especially to claims in the sciences.

For the Christian, *personal* integration means seeking to live a unified life of integrity—being the same person in public as in private, such that the various aspects of one’s personality are consistent with each other and conducive to a life of human flourishing as a disciple of Jesus.

Both conceptual and personal integration are absolutely essential for a committed Christian, but in this chapter I will focus on integration only as it relates to worldview.

Adolfo Lopez-Otero, a Stanford engineering professor and a self-described secular humanist, once offered advice to thinking Christians who want to impact the world: When a

Christian professor approaches a non-believing faculty member, . . . they can expect to face a polite but condescending person [with a belief that they possess] superior metaphysics who can't understand how such an intelligent person [as yourself] still believes in things which have been discredited eons ago.[6]

He went on to say that Christian professors "cannot afford to give excuses . . . if they are honest about wanting to open spiritual and truthful dialogue with their non-believing colleagues—that is the price they must pay for having declared themselves Christians."[7]

While Lopez-Otero's remarks are directed to Christian professors, his point applies to all thinking Christians: If we claim that our Christian views are true, we need to back that up by interacting with the various ideas that come from different academic disciplines. In short, we must integrate Christianity with influential claims from extrabiblical sources, especially from the sciences. This is a major duty of parenting, grandparenting, and discipleship in the local church and parachurch groups.

Integration as a Rational Justification of Christian Truth Claims As noted earlier, the word "integration" means to form or blend into a whole, to unite. Part of the point of integration, as it relates to the subject at hand, is to provide rational justification for Christian truth claims. In this context, we may distinguish three different aspects of the justificatory side of integration: direct defense, polemics, and Christian explanation.

Direct Defense In direct defense, one engages in integration with the primary intent of enhancing or maintaining directly the rational justification of Christian theism or some proposition taken to be explicit within or entailed by it (e.g., abortion is wrong). Specific attention should be given to topics that are intrinsically important to mere Christianity or that are currently under fire in the broader culture. (Hereafter, for brevity's sake, I will simply refer to these issues as "Christian theism"—including not only things like the existence of God, creation, and the resurrection of Jesus, but also specific views about a particular area of study that one takes to be relevant to the integrative task.) There are two basic forms of direct defense, one negative and one positive.[8] The less controversial of the two is a negative direct defense, where one attempts to remove potential defeaters of Christian theism. If you have a justified belief regarding some proposition P, a defeater is something that weakens or removes that justification.

Defeaters come in two types.[9] A *rebutting defeater* gives justification for believing ¬P (not P)—in this case, believing that Christian theism is false. For example, attempts to show that the biblical concept of the family is dysfunctional and false or that homosexuality is causally necessitated by genes or brain states and that, therefore, it is not a proper object for moral appraisal, are cases of rebutting defeaters. If successful, they show that the targeted area of Christian theism is false.

An *undercutting defeater* does not give justification for believing ¬P, but rather seeks to remove or weaken justification for believing P in the first place. Critiques of the arguments for God's existence are examples of undercutting

defeaters. For example, there are attempts to show that one cannot use the Second Law of Thermodynamics as evidence that the universe had a beginning because the Law applies only to finite regions within the universe. If successful, undercutting defeaters show that, while Christian theism may be true, there is no good reason to believe it. When defeaters are raised against Christian theism, a negative defense seeks either to rebut or undercut those defeaters.

By contrast, a *positive direct defense* is an attempt to build a positive case for Christian theism. Arguments for the existence of God, objective morality, the existence of the soul, the value and nature of virtue ethics, and the possibility and knowability of miracles are examples of a positive direct defense of Christian theism. The validity of direct defense is not accepted by all Christian intellectuals. For example, various species of what may be loosely called Reformed epistemology run the gamut from seeing only a modest role for a positive direct defense to an outright rejection of this type of activity in certain areas, e.g., in justifying belief in God and the authority of holy Scripture. This book has employed both types of direct defense.

All of this went rather quickly, so here's a map to illustrate the various branches of a direct defense: Direct Defense

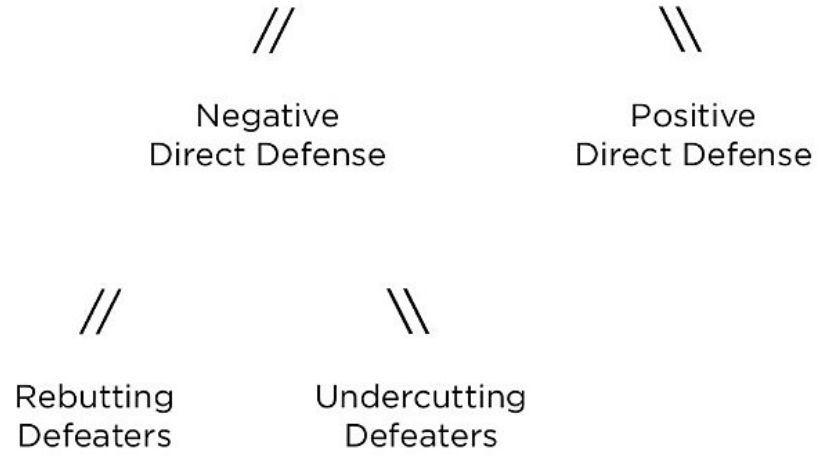

Fig. 14.2

Polemics In polemics, one seeks to criticize views that rival Christian theism in one way or another. Here the focus is not on providing evidence for or responding to objections against Christian theism; rather, the focus is on providing defeaters (of both kinds) for alternatives to Christian theism. Critiques of scientific naturalism, physicalist views of the human person, naturalistic accounts of the origin of life, behaviorist models of educational goals, and Marxist theories of economics are all examples of polemics.

Theistic Christian Explanation Suppose we have a set of items x_i through x_n that stand in need of explanation, and we offer some explanation E as an adequate or even best explanation of those items. In such a case, E explains x_i through x_n, and this fact provides some degree of confirmation for E. For example, if a certain hypothesized purpose statement (e.g., Paul wrote this letter to bring theological unity to Jews and Gentiles in Rome) explains the various data of a biblical text (the book of Romans), then this fact offers some confirmation for the belief that the statement is the correct interpretation of that text.

Now, Christian theists ought to be about the business of exploring the world in light of their worldview and, more specifically, of using their theistic beliefs as explanations of various facets of the world. Put differently, we should seek to solve intellectual problems and shed light on areas of puzzlement by utilizing the explanatory power of our Christian worldview.

For example, for those who accept the existence of natural moral law (that there is an objective moral law

rooted in the creation that can be known without using the Bible); the irreducibly mental nature of consciousness; natural, equal human rights; or the fact that human flourishing follows from certain biblically mandated ethical and religious practices; then the truth of Christian theism provides a good explanation of these phenomena. And this fact can provide some degree of confirmation for Christian theism.

These distinctions are part of the very essence of learning how to think well—negative direct defense with rebutting and undercutting defeaters; positive direct defense; polemics; theistic explanation. Christian schools and home-schooling parents need to come up with age-appropriate ways to instill these distinctions into students. If this is done, it will help to create bold, confident Christians who are not in the least tempted by scientism.

With this framework in place, we can now turn to the actual integration of Christianity and science.

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1. For discussions of these examples, see William Lane Craig, *Reasonable Faith: Christian Truth and Apologetics*, 3rd ed. (Wheaton, IL: Crossway, 2008); Stephen C. Meyer, *Signature in the Cell: DNA and the Evidence for Intelligent Design* (New York: HarperCollins, 2009); Robert Emmons, *Thanks: How Practicing Gratitude Can Make You Happier* (New York: Houghton Mifflin, 2007).
2. "Inerrancy means that when all facts are known, the Scriptures in their original autographs and properly interpreted will be shown to be wholly true in everything that they affirm, whether that has to do with doctrine or morality or with the social, physical, or life sciences" (Paul Feinberg, "The Meaning of Inerrancy," in *Inerrancy*, ed. Norman L. Geisler [Grand Rapids, MI: Zondervan, 1980], 294). I have defended the rationality of holding to this position in J. P. Moreland, "The Rationality of Belief in Inerrancy," *Trinity Journal* 7, no. 1 (Spring 1986): 75–86. Available online at https://biblicalstudies.org.uk/article_inerrancy_moreland.html.
3. William Provine, "Darwinism: Science or Naturalistic Philosophy?" *Origins Research* 16, no. 1/2 (1994): 9. Cited in Dallas Willard, *Knowing Christ Today* (New York: HarperOne, 2009), 5.
4. Steven Pinker, "Science Is Not Your Enemy," *The New Republic* (August 19, 2013): 33. Cited in Richard N. Williams and Daniel N. Robinson, eds., *Scientism: The New Orthodoxy* (London: Bloomsbury, 2015), 14–15.
5. Augustine, *De genesi ad litteram* 1.21. Cited in Ernan McMullin, "How Should Cosmology Relate to Theology?" in *The Sciences and Theology in the Twentieth Century*, ed. Arthur R. Peacocke (Notre Dame, IN: University of Notre Dame Press, 1981), 20.
6. Adolfo Lopez-Otero, "Be Humble, but Daring," *The Real Issue* 16 (September–October 1997): 10.
7. Ibid., 11.
8. See Ronald Nash, *Faith and Reason* (Grand Rapids, MI: Zondervan, 1988), 14–18.
9. For a useful discussion of various types of defeaters, see John Pollock, *Contemporary Theories of Knowledge* (Totowa, NJ: Rowman & Littlefield, 1986), 36–39; Ralph Baergen, *Contemporary Epistemology* (Fort Worth, TX: Harcourt Brace, 1995), 119–124.

15

A Plan for the Integration of Christianity and Science

When problem areas surface in the attempt to integrate Christianity and science, Christians need to think hard about the issues in light of the need for strengthening the rational authority of Christian theism and placing it squarely within the plausibility structure of contemporary culture. When one addresses problems like these, there will emerge a number of different ways that theology—by which I mean here any Christian idea that seems to be part of a Christian worldview—can interact with an issue in a discipline outside of theology.

Five Ways to Relate Issues in Science and Christian Theology Here are some of the ways in which such interaction can take place. These represent different strategies for handling a particular difficulty in integration. These strategies can be employed where appropriate, on a case-by-case basis. By having this set of categories for problem solving, we Christians can increase our stock of tools for handling issues that arise between science and Christianity.

1. The Two Realms Model This strategy for addressing conflicts between theology and other disciplines is based on the idea that propositions, theories, or methodologies in theology and another discipline such as science may involve two distinct, nonoverlapping areas of investigation.

For example, debates about angels or the extent of the atonement have little to do with organic chemistry. Similarly, it is of little interest to theology whether a methane molecule has three or four hydrogen atoms in it.

Over the past three decades I have used this strategy in my own academic work in response to the claim that neuroscience has proven that we are nothing more than our brains—that conscious states are really, in one way or another, identical to brain states, and that therefore there is no such thing as a "soul." In response, I have shown that, while neuroscience is a wonderful tool, it is actually inept and irrelevant for resolving issues about the *nature* and the *existence* of consciousness and the soul. The central issues in these disputes are actually not scientific but rather philosophical, theological, and commonsensical. So the two realms or domains—theology and philosophy versus neuroscience—are focusing on different areas of investigation.

2. The Complementarity Model

A second strategy is based on the idea that propositions, theories, or methodologies in theology and another discipline such as science may involve *two different, complementary, noninteracting approaches to the same reality*. When this model is used, the two disciplines are referring to the same object but from different perspectives,

offering partial descriptions at different levels and with different vocabulary.

So the proposition “Water is formed by God” and the proposition “Water is formed by a synthesis reaction of hydrogen and oxygen” are both true. Neither one purports to tell the whole story, but both make true claims about reality. They complement each other from different angles.

There is a significant danger, however, in this approach. Why? Because it can have the effect of de-supernaturalizing the world and undercutting our ability to detect God’s direct miraculous actions in the world. For example, in this way the complementarity view kills the idea that direct miraculous answers to prayer occur and can be rationally detected. The complementarity view has been used to support physicalism regarding the human person (i.e., the belief that neuroscience gives the real, physical composition of human persons, and theological soul-talk or spirit-talk are complementary ways of describing how the brain can function—in a psychological or spiritual way).

This approach has also been used to promote theistic evolution, on the grounds that evolutionary theory accurately tells us what happened in the development of life and how it happened, while theology tells us why life is here—e.g., so that God can have fellowship with us. Some advocates of theistic evolution, certified by the complementarity view, allow that God “guided” the process of evolution—but that no one can detect anything that he did!

In 2001, atheist philosopher Quentin Smith published a remarkably insightful article of crucial relevance to the task of integration—in particular, he addressed the overuse of the complementarity view. For more than fifty years, Smith notes, the academic community has become increasingly secularized and atheistic even though there have been a

fair number of Christian teachers involved in that community. How could this be? Smith's answer amounts to the claim that Christians compartmentalized their faith, kept it tucked away in a private compartment of their lives, and did not integrate their Christian ideas with their work. He wrote, This is not to say that none of the scholars in their various academic fields were realist theists [theists who took their religious beliefs to be true] in their "private lives"; but realist theists, for the most part excluded their theism from their publications and teaching, in large part because theism . . . was mainly considered to have such a low epistemic status that it did not meet the standards of an "academically respectable" position to hold."[1]

Smith goes on to claim that, while Christians have recaptured considerable ground in the field of philosophy, "theists in other fields tend to compartmentalize their theistic beliefs from their scholarly work; they rarely assume and never argue for theism in their scholarly work."[2]

Thus, while there is a place for using the complementarity view of integration, one must be very careful not to overuse it. Such overuse marginalizes Christianity and allows Christian complementarians to hide behind this view of integration.

3. The Presuppositions Approach

This approach is based on the belief that theology can support the presuppositions of science, and vice versa. Science requires metaphysical and epistemological foundations, and theology can justify (or at least help to justify) them.

I argued earlier that many of the presuppositions of science (e.g., the existence of truth; the rational, orderly nature of reality; the adequacy of our sensory and cognitive

faculties as tools suited for knowing the external world) make sense and are easy to justify given Christian theism, but are odds with, and without ultimate justification in, a naturalistic worldview. Similarly, some have argued that philosophical critiques of epistemological skepticism and defenses of the existence of a real, theory-independent world and a correspondence theory of truth offer justification for, or at least confirmation of, some of the presuppositions of theology.

4. The Practical Application Model Another approach believes that theology can fill out and add details to general principles in another discipline and vice versa. Further, theology can practically apply principles in another discipline and vice versa.

For example, theology teaches that fathers should not provoke their children to anger (Eph. 6:4), and psychology can add important details about what this means by offering information about family systems, the nature and causes of anger, etc. Psychology can devise various tests for assessing whether one is or is not a mature person, and theology can offer a normative definition to psychology as to what a mature person is.

5. The Direct Interaction Model The first four approaches are important aspects of integration, and each one is a tool that may be helpful in resolving an integrative problem between disciplines like science and theology. And while I have acknowledged the usefulness of the complementarian view in resolving various integrative difficulties, the widespread overuse of this view has hurt Christianity by placing it into the arena of the noncognitive and outside the culture's plausibility structure. But now we come to

what I believe to be the most important, yet also controversial, approach to integration: the direct interaction view.

In this model, propositions, theories, or methodologies in theology and another discipline such as science may *directly interact* with each other, either positively or negatively. One area of study might offer rational support for the other, or one area of study might raise rational difficulties for the other.

For example, certain theological teachings about the existence of the soul raise rational problems for philosophical or scientific claims that deny the existence of the soul (and vice versa). Likewise, the general theory of evolution raises various difficulties for certain ways of understanding the book of Genesis (and vice versa). By way of application to current debates about intelligent design theory and theistic evolution, it may be helpful to note that the intelligent design movement is an example of applying the direct interaction model, while theistic evolution is a result of appropriating the complementarian approach.

Again, those who believe that consciousness and the soul are not physical typically embrace the direct interaction view, while Christian physicalists who deny the soul tend to fit into the complementarian camp.[3]

The direct interaction view requires a high view of the rational justification of theological and philosophical claims consistent with Christianity. Why do I say this? Because advocates of this position are willing to accept, use, defend, and go toe-to-toe with claims from other disciplines, including the majority of scientists, that seem inconsistent with or that seem to undermine a Christian worldview. Thus the direct interaction view fosters boldness and courage among its Christian advocates.

However, this approach can place and often places Christian claims outside the mainstream of academic thought and pits Christians against the majority of the experts trained in the relevant fields (biology, paleontology, anthropology, and so on, regarding intelligent design and evolution). Usually, it is wise to follow the views of the majority of experts in a field. We certainly do that when our doctor tells us the best treatment for some disease. So why isn't it irrational to go against the majority of experts in embracing, for example, intelligent design instead of evolutionary theory? This question is especially pressing if one is a layperson and not an expert with regards to the issue in view.

Rational Criteria for Going against the Experts

Using the evolution versus intelligent design controversy as an example, I suggest that when four criteria are met—and I believe they actually are met in this controversy—one is rationally justified in embracing intelligent design theories of the origin and development of life and rejecting the blind watchmaker thesis, even though the latter is held by almost all experts in the relevant scientific fields, e.g., biology.

(1) *Make sure there is not an alternative interpretation of the Bible that is interpretively reasonable and that resolves the tension.* In my own journey during the late 1970s, I changed from being a *young earth creationist* (the days of Genesis are twenty-four-hour consecutive days and the universe is very young—e.g., 10,000–40,000 years old) to being an *old earth progressive creationist* (a view held by most, but not all Christian intelligent design advocates). This

view implies that naturalistic and theistic evolution are false, the thesis of common descent is questionable, and God intervened and created new kinds of life at various points in the history of life. Moreover, it implies that the agency of directive activities of God can be scientifically detected. It also implies that the universe is old (13.8 billion years) and the Earth is old (4.568 billion years), but that Adam and Eve are relatively recent.[4]

I changed my view because at that time there were a number of credible Old Testament experts (e.g., Gleason Archer, Walter Kaiser) who held that Genesis taught an old earth view. I read their works and those of other trusted Christian scholars and concluded that the old earth view was, indeed, exegetically acceptable. I did not and still do not believe that theistic evolution is exegetically acceptable.

However, I happily acknowledge that there are numerous well-trained and sophisticated advocates of young earth creationism, and I believe it is a position that should continue to be developed and supported by biblical exegesis and scientific research. In my view, young and old earth creationism are views that should be accepted within the orthodox Christian community, grace and kindness should be extended between the two camps, and theistic evolution is *not* acceptable—for theological, philosophical, and scientific reasons, as we have discussed throughout this book.[5]

So look around, read commentaries on the problematic texts written by scholars credentialed in the relevant field (e.g., Old Testament studies), and be sure that the scholars are respected by the evangelical community as faithful men and women. One way to test this is to see where they teach and to ask your pastor or another Christian leader if the scholar in question is respected as a faithful person with a high view of Scripture. If you are sending your son or

daughter to a Christian school, ask professors and administrators what their attitude is toward intelligent design theory, if that view is taught and promoted by any professors at the school, and if professors have to express belief in a literal Adam and Eve who existed at the same time. If you get a lot of wiggling around, *caveat emptor*.

(2) *The presence of a band of highly trained, academically qualified scholars with a good track record for publishing in top journals or with highly regarded book publishers, and who are unified in rejecting the view—e.g., the blind watchmaker thesis (THE key issue) and, perhaps, the thesis of common descent—held by even a vast majority of the relevant experts.* This criterion assures us that intelligent design theory is defensible and very plausible. If you look at the resumes of the top advocates of intelligent design, they all have one or two doctorates from well-regarded universities, and their writings are rigorous, scholarly, and very well-informed. Moreover, they have made a robust intellectual case for intelligent design and have provided strong negative defenses against critics of intelligent design and the arguments they employ.

It's easy to see the reason for this criterion. If there were no highly trained PhDs who provided a sophisticated alternative to naturalistic and theistic evolution, and who demonstrate familiarity with the expert-majority view and have responded to their criticisms with excellence, that would present the Christian community with a real problem. It is a good thing that the intelligent design movement is led by highly credentialed scholars with a solid track record of excellent publications, and with a substantial, highly rigorous theory. We can't all be experts on everything, and in that case we have to rely on faithful experts, and intelligent design advocates fit that bill with excellence.

(3) *There are good historical, sociological, or theological explanations for why the expert majority holds to the problematic view—in this case, evolution—instead of their adherence to the problematic view being largely a rational commitment based on a lot of good arguments and strong evidence.*

Historically, it is very plausible that the shift from creationism to evolution with the publication of Charles Darwin was not a function of evidence. Rather, it was an expression of the desire to get rid of theology in science, especially in biology, geology, and paleontology, and thus to "naturalize" the study of science. In one of the most authoritative analyses of the Darwinian revolution in print, historian Neal Gillespie of Georgia State University offers an eye-opening account of how that revolution really took place.[6]

According to Gillespie, that revolution from creationism to Darwinism was not primarily or most importantly about explaining evidence. In fact, for some time, and certainly when Darwin was just formulating and circulating his theory, there was as much or even more evidence for creation. Darwin predicted hundreds of thousands of transitional species, but the fossil record contained none, or perhaps more charitably, very few, and each purported transitional form had scientific arguments against it.

The fact that most of an animal's parts need a lot of other parts before they can function could be explained easily by creationism but not by evolution. It is hard to see the survival value of a slow, gradual development of a species that goes through periods when only some of the relevant parts exist and, thus, that group of parts cannot function to convey survival value.

If the Darwinian revolution was not *primarily* about the evidence (though evidence was certainly important to the

debate), then what was it about? Observe the following list of quotes from Gillespie: “The important thing was to get theology out of science.”[7]

- “[S]cience as a whole for the first time openly developed a completely natural world system, one that was neither logically nor theoretically obligated to theology in any way.”[8]
- “The episteme shift under consideration [e.g., the paradigm shift from creationism to Darwinism] did not require the repudiation of religion as such. It only required its rejection as a means of knowing the world.”[9]
- “Just as science shifted from a theological ground to a positive one [empirical grounding], so religion . . . shifted from religion as knowledge to religion as faith.”[10]

Thus, historically, the shift from creationism to Darwinism was primarily, though not exclusively, a shift in philosophy of science. Methodological naturalism replaced appeals to evidence of God’s actions as legitimate scientific explanations. In my experience of working with university students for forty-six years, I can assure you that this historical event set a precedent according to which methodological naturalism is accepted today with little or no examination of its legitimacy.

The *sociological explanation* for why the majority of scientists accept evolution without adequate rational justification for doing so is the way in which science textbooks are written and young science students are socialized into the study of science. Students are not presented with any defeaters of evolutionary theory. Rather, the social process of becoming a scientist is one that tries to force harmony and homogeneity regarding naturalistic evolution and methodological naturalism.

For example, years ago I was invited by a student group to present a case for God's existence at the University of California–Berkeley. While there, I learned that a month prior to my visit, William Dembski had given a lecture defending intelligent design theory. The biology faculty of the university instructed their students to boycott Dembski's lecture. There was a lot of mocking and ridicule of him among the biologists—despite the fact that Dembski has a master's degree in science, a master's degree in statistics, a master's degree in divinity, a PhD in philosophy, and a PhD in mathematics—along with postdoctoral work in mathematics at MIT, in physics at the University of Chicago, and in computer science at Princeton. But if Dembski is so stupid and his proposals on intelligent design are so patently ridiculous, why wouldn't the professors simply send their students to the lecture and have them tear his arguments apart? That should be easy. Of what were the biology faculty afraid?

Around that time, while giving some lectures at UCLA, I met a doctoral student in microbiology. He pulled me aside and said that his dissertation supervisor admitted to him in confidence that his dissertation proposal was excellent. It was a proposal to provide empirical verification or falsification for intelligent design theory. But the supervisor told him to stay far away from intelligent design. If he insisted on this topic for his dissertation, he would not only flunk, but he would have his funding withdrawn and would be kicked out of the doctoral program.

These two stories illustrate ways in which sociological factors and "groupthink" sustain the advocacy of evolution among science experts. It is not primarily the rational factors. Ask your local college biology professors how many books by intelligent design advocates they have read and what arguments they found most powerful against

evolution. You will probably be met with a deer-in-the-headlights look.

Finally, there are *theological* explanations for the acceptance of evolution by the experts, an acceptance that goes far beyond the evidence and feels almost like a religious commitment. These theological reasons, at least in the case of naturalistic evolutionists, amount to a desire to destroy Christianity. In a rare moment of candor, in the context of discussing a view that takes irreducible, rational mind and its relationship to the world as something fundamental, atheist philosopher Thomas Nagel says that this view makes many people in this day and age nervous. I believe this is one manifestation of a fear of religion which has large and often pernicious consequences for modern intellectual life.

> In speaking of the fear of religion, I don't mean to refer to the entirely reasonable hostility toward certain established religions and religious institutions, in virtue of their objectionable moral doctrines, social policies, and political influence. Nor am I referring to . . . the acceptance of evident empirical falsehoods. I am talking about something much deeper—namely, the fear of religion itself. I speak from experience, being strongly subject to this fear myself*: I want atheism to be true and am made uneasy by the fact that some of the most intelligent and well-informed people I know are religious believers. It isn't just that I don't believe in God and, naturally, hope that I'm right in my belief. It's that I hope that there is no God! I don't want there to be a God; I don't want the universe to be like that.*
>
> *My guess is that this cosmic authority problem is not a rare condition and that it is responsible for much of the scientism and reductionism of our time. One of the tendencies it supports is the ludicrous overuse of evolutionary biology to explain everything about life,*

> *including everything about the human mind. Darwin enabled modern secular culture to heave a great collective sigh of relief, by apparently providing a way to eliminate purpose, meaning, and design as fundamental features of the world.*[11]

In sum, historically, evolution gave scientists a way to get God and theology out of science. Sociologically, there is social pressure for the science community to remain homogenous, with groupthink about evolution, and with social punishment meted out to those who give the slightest hint that they are considering the plausibility of intelligent design theory. And theologically, the cosmic authority problem means that many academics in science do not want there to be a God, and evolution gives them a way to be a naturalist. Thus, the widespread agreement among science experts about the credibility of evolution can be explained in this way: It is not the strength of the evidence and arguments that provide the primary rational support for evolution and against intelligent design. That is not the primary reason for evolution's ubiquity. After all, most scientists are completely unfamiliar with intelligent design literature and, far too often, problems with evolutionary theory are not presented in the science classroom. No, the primary explanation for expert agreement about evolution is historical, sociological, and theological.

(4) *Given that Christianity is a highly rational worldview with much evidential and argumentative support, any view that cuts against central components of a Christian worldview should be rejected precisely due to that fact.* Christianity is a worldview that enjoys a tremendous amount of rational justification, evidence, and argumentative support.[12] Given that fact, it is rational to reject a potential defeater of Christianity precisely because it cannot withstand being weighed against the significantly high

rational support of a Christian worldview. There may come a time when an aspect of a Christian worldview will need to be rejected, but this is not the time and evolution is not a sufficient defeater.

Conclusion

I believe that the information in this chapter provides solid advice for how to think about Christianity and science, particularly intelligent design theory and the blind watchmaker theory. If I am right about this, then this information gives us a way to go forward.

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1. Quentin Smith, "The Metaphysics of Naturalism," *Philo* 4, no. 2 (2001): 1.
2. Ibid., 3. The same observation about advances in philosophy has been noted by Mark Noll (see his *The Scandal of the Evangelical Mind* [Grand Rapids, MI: Eerdmans, 1994], 235–238).
3. There are Christian thinkers who adopt the complementarity view of integration and advance different versions of Christian physicalism. See Richard H. Bube, *Putting It All Together* (Lanham, MD: University Press of America, 1995); Malcolm Jeeves, *Psychology and Christianity* (Downers Grove, IL: InterVarsity Press, 1976); Jeeves, *Mind Fields* (Grand Rapids, MI: Baker, 1994); Jeeves, *Human Nature at the Millennium* (Grand Rapids, MI: Baker, 1997); D. M. Mackay, *Christianity in a Mechanistic Universe* (London: Inter-Varsity Press, 1965); Mackay, *The Clockwork Image* (Downers Grove, IL: InterVarsity Press, 1974); Mackay, *Human Science and Human Dignity* (Downers Grove, IL: InterVarsity Press, 1979). Currently, Christian theologian Nancey Murphy has been a leading advocate of Christian physicalism, but I do not know if she adopts the complementarity view. See Nancey Murphy, "Human Nature: Historical, Scientific, and Religious Issues," in *Whatever Happened to the Soul?* ed. Warren S. Brown, Nancey Murphy, and H. Newton Malony (Minneapolis: Fortress, 1998), 1–29; Murphy, *Bodies and Souls, or Spirited Bodies?* (Cambridge: Cambridge University Press, 2006). For a defense of biblical dualism, see John Cooper, *Body, Soul, and Life Everlasting* (Grand Rapids, MI: Eerdmans, 2000).
4. For a powerful defense of the actual historicity of Adam and Eve, see J. P. Moreland, Stephen C. Meyer, Christopher Shaw, Ann K. Gauger, and Wayne Grudem, eds., *Theistic Evolution: A Scientific, Philosophical, and Theological Critique* (Wheaton, IL: Crossway, 2017), chapters 10–14.
5. Once again, I recommend *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*, referenced in note 4, above.
6. Neal Gillespie, *Charles Darwin and the Problem of Creation* (Chicago: University of Chicago Press, 1979), chapters 1, 4, and 5.
7. Ibid., 12.
8. Ibid., 13.
9. Ibid., brackets mine.
10. Ibid., 16, brackets mine.
11. Thomas Nagel, *The Last Word* (New York: Oxford, 1997), 130–131, my emphasis.
12. See the sources listed in the selected bibliography.

One Final Plea

In this book I have endeavored to make numerous rational arguments, with careful definitions, about the nature of scientism. After carefully considering its claims, I have come to the conclusion that it is not science, that it undermines science, that it encourages people to misuse science, and that because it is so widely believed, it ends up hurting Christians who buy into its deceptive lies.

If you agree with me, and if you agree with much of what has been presented in this book, then I urge you to read it again, and spread this information to as many people as you can.

Please do not fail to act on what you have read. Very few Christians know anything about scientism, and they certainly do not understand how it is marginalizing Christianity and placing it outside the culture's plausibility structure. And statistics from the Barna Group and other opinion researchers show that scientism is causing our children and grandchildren to leave the faith in record numbers. This has to stop because, as I have tried to argue in this book, there is no solid reason for it. The disastrous implications of the secularization of our culture, with scientism being the primary mover here, are largely due to evangelical ignorance of this issue.

Scientism is a silent yet deadly killer of Christianity. But the evidence presented in this book provides part of a successful inoculation against scientism. How sad it would be if pastors, parachurch leaders, parents, and grandparents continued to turn their heads away, ignore scientism, and

unintentionally continue to foster Christian ignorance in this area. As the Puritan minister and renowned author Cotton Mather proclaimed, “Ignorance is the Mother not of Devotion but of HERESY.”[1] Ignorance of scientism is a significant part of the crisis of our age. Let’s stand against it in an informed and winsome way.

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1. Cited in Allen Carden, *Puritan Christianity in America* (Grand Rapids, MI: Baker, 1990), 186.

Glossary

act of will: A choice, an exercise of power, an endeavoring to act, usually for the sake of some purpose.

a posteriori (Latin for “from the latter”): Inductive knowledge based on experience (e.g., it is raining outside).

a priori (Latin for “from the earlier”): Deductive knowledge that does not depend on experience in order to be true (e.g., all bachelors are unmarried) **authority of philosophy**: Insofar as science and philosophy purport to answer the same central philosophical questions, in most cases the support that science could in principle provide for its answers is not as strong as that which philosophy could in principle provide for its answers. So, should there be conflicts, the authority of philosophy in most cases can be greater in principle.

autonomy of philosophy: Among the central questions of philosophy that can be answered by one standard theoretical means or another, most can in principle be answered by philosophical investigation and argument without relying substantively on the sciences.

basic beliefs: Beliefs that are sensible to accept without the need for further beliefs to justify them, and which form the basis or foundation for many other things that are believed.

begging the question (question-begging): An informal fallacy in logic where a person assumes the truth of the

conclusion in the premises of the argument. For example, it begs the question to argue in the following way: There are no miracles. How do I know? Because I investigated all the miracle claims and found them to be false. Why did I find them to be false? Because my investigation was guided by the truth that miracles do not happen.

belief: A person's view, constituted by semantic content (e.g., that it is raining), accepted to varying degrees of strength, of how things really are.

brain state: Something that happens in the brain, such as the activation of a group of neurons or the firing of a synapse.

Cartesian foundationalism: A form of foundationalism (named after René Descartes) that views basic beliefs (which justify nonbasic beliefs) as un-doubtable or else not appropriate to serve as a foundational belief *(see also* foundationalism).

causal closure of the physical: On this principle, when one is tracing the causal antecedents of any physical event, one will never have to leave the level of the physical.

coherent conceivability: We can conceive of something happening without containing a contradiction. Coherent conceivability is good evidence that what we are conceiving to be possible actually is possible.

conceptual integration: The blending and unifying of one's rationally justified theological beliefs (especially those derived from careful study of the Bible) and reasonable ideas from extrabiblical sources (e.g., biology) into a coherent, intellectually satisfying Christian worldview.

conceptual relativism: A form of relativism where what exists (ontology) is relativized to how people conceive of the

world, scientific paradigms, categorical frameworks, or worldviews.

consciousness: A series of inner states that a person experiences; it is what a person is aware of when he or she engages in first-person introspection.

contingent: The word "contingent" has two related meanings. If it is ascribed to some existent thing like a table or planet Earth, then it means that, while the thing does exist, it could have *not* existed. If it is ascribed to a truth, such as, "There are mountains in Colorado," then, while the statement is true, it could have been false, say, because certain geological events that formed the mountains did not happen.

correspondence theory of truth: A proposition (the meaning or semantic content of a sentence or assertion) is true when what it asserts to be the case is the case.

defeaters: There are two kinds of defeaters: an *undercutting* defeater shows that the evidence offered for a view is insufficient and, thus, while the view itself may be true, there is no reason (in light of the defeater) to expect anyone else to believe that view; a *rebutting* defeater attacks the view directly (rather than merely attacking the evidence for the view) and shows that the view itself is false.

dualism: Dualists believe that the soul is immaterial, different from the body and brain (*see also* substance dualism and property dualism).

emergent property: The idea that a nonphysical property can arise from the functioning of a physical system (such as a brain).

empirical science: An approach to understanding the world that focuses on repeatable, regularly occurring events or patterns in nature (e.g., the relationship between pressure, temperature, and volume in a gas).

empiricism: The view that all knowledge is derived through sense-experience.

epiphenomenalism: The view that the mind is a by-product of the brain and has no causal power of its own; the mind merely "rides" on top of the events of the brain.

fine-tuning: In relation to science, the understanding that small deviations from the actual values of the constants and quantities in question render the universe life-prohibiting; or, alternatively, that the range of life-permitting values is extremely narrow in comparison with the range of assumable values.

first-order issue: A topic of science about some phenomenon (*see also* second-order issue).

first philosophy: The idea that there is a realm of rational investigation that is the proper domain of philosophy, that is independent of and more basic or fundamental than science, and that gives us knowledge of the topics studied in that realm, including knowledge of reality.

foundationalism: The idea that there is a difference between basic and nonbasic beliefs, and that some of our (nonbasic) beliefs are justified by other (basic) beliefs.

functionalism: The idea that consciousness is what the brain *does*, not something that the brain (or soul) *has*; this is currently the most popular physicalist theory (*see also* physicalism).

historical science: A form of science that focuses on past singularities that are not repeatable (e.g., the origin of the universe, first life, the origin of various kinds of life).

immediate: Something like a sensation of pain is "immediate" if it is known directly without being known by means of something else. Only mental states are immediate (*see also* mediate).

intelligent design: The idea that, within the domain of science, objective, empirically detectable evidence exists for intelligent design in biological history or phenomena; in other words, inferences can be made to an intelligent designer.

intentionality: The "of-ness," "about-ness," or directed-ness of mental states toward an object.

internal realism: The idea that the notion of "exists, doesn't exist" applies only within a theory and has no legitimate application beyond that to some alleged theory-independent "real" world.

irreducible: Something is "irreducible" if it cannot be identified as being something other than what we think it is. For example, if redness can be reduced to a wavelength of light, then the redness *is the same thing* as a wavelength of light. Thus, redness turns out to be something other than what we thought it was, namely, an experiencable quality or shade.

***kalam*:** The argument that everything that begins to exist has a cause; the universe began to exist, therefore the universe has a cause.

law of identity: If x is the same thing as y, then whatever is true of x is true of y, and vice versa.

linguistic relativity: The view that groups, cultures, or those who share a common language construct the world and its order differently and, thus, different cultures literally live in different worlds, with different principles of order.

many worlds hypothesis: The thesis that there is a "world ensemble" containing an infinite number of actual, concrete universes parallel to our own and with which we are incapable of interacting in any way, including scientific means of interaction.

mediate: Something like the shape of a rock is "mediate" if it is known by means of something else—in this case, a sensation or an experience of the rock; it is by means of having a sensation of the rock's shape that we know that shape. Physical objects and states of objects are known mediately (*see also* immediate).

metanarrative: An overarching story that exhibits an objective reality that is just there, existing for everyone.

metaphysical realism: The thesis that the world/reality is as it is, independently of how people perceive it to be.

methodological naturalism: The idea that, while doing science, one must seek only natural causes or explanations for scientific data.

natural theology: The study of the existence and attributes of God without reference to or appealing to divine revelation.

necessary being: A being which, if it does exist, could not not-exist, but would exist throughout all possible worlds.

necessary truths: Truths that cannot possibly be false (e.g., 2+2=4).

negative direct defense: In Christian apologetics, a form of direct defense that attempts to remove defeaters of Christian theism.

noncognitivism: The idea that particular kinds of statements (for example, moral statements) lack truth-values; they are neither true nor false.

nonempirical claims: Claims that are outside of the hard sciences and cannot be tested with the five senses, such as claims at the core of ethics, political theory, and religion. Some believe that such items are not items of knowledge but, rather, matters of private feeling.

personal explanation: An explanation of some event/state of affairs being brought about intentionally by a person (divine or otherwise), which will employ notions such as the intention of the agent and the relevant power of the agent that was exercised in causing the state of affairs.

personal integration: For Christians, the desire to live a unified life, in which one is the same in public as in private; in which the various aspects of one's personality are consistent with each other and conducive to a life of human flourishing as a disciple of Jesus.

philosophical behaviorism: The thesis that conscious states are nothing more than body movements (e.g., to be in pain is to exhibit behavior associated with being in pain).

physicalism: The thesis that everything that exists is physical or depends on and is rooted in the physical.

plausibility structure: A set of background assumptions that determines how people feel and act, and what they consider credible enough to listen to and evaluate.

polemics: The act of criticizing views that rival Christian theism by providing defeaters for such views.

positive direct defense: An attempt to build a positive case for Christian theism.

principle of sufficient reason: For everything that exists contingently, there is a sufficient explanation for why it exists as opposed to not existing.

property: An attribute or quality that characterizes something. For example, a ball may have the properties of being red and being round. An *event* (or a *state*) is when something *has* a property or *undergoes a change in* properties at or through time. A leaf being red for two days, or an iron rod becoming hot at noon, would be events that involve the continued possession of a property, or a change in properties, at or through time.

property dualism: The view that conscious properties/events are mental and not physical.

question-begging (*see* begging the question) **revealed theology**: The study of the existence and attributes of God based on reference to or appealing to divine revelation.

scientific antirealism: The view that a successful scientific theory has no ontological implications whatsoever, but simply helps scientists do what they are doing.

scientific realism: The thesis that entities that populate our current successful theories (e.g., electrons in current views of matter, and the atom) are real and the theories' descriptions of those entities are true or approximately true.

scientism: The view that the hard sciences provide the only or at least a vastly superior knowledge of reality compared to other disciplines.

second-order issue: A topic of philosophy about science itself (*see also* first-order issue).

self-refuting: When a statement is included in its own subject matter and fails to satisfy its own standards of acceptability. For example, “All sentences are exactly three words long.”

sensate culture: A culture in which people believe only in the reality of a physical universe that is capable of being experienced with the five senses and studied by the hard sciences.

sensation: A state of awareness or sentience, e.g., a conscious awareness of sound or pain.

strict physicalism: A version of naturalism that says that reality is exhaustively described by physics, and perhaps chemistry, and that therefore everything is physical.

substance dualism: The view that the owner/possessor of consciousness is a nonphysical self, an “I,” or a soul, and that this nonphysical substance is different from the body and brain.

taxicab fallacy: An informal logical fallacy that occurs when one “hops into” a principle or system of reason, and uses that principle until he no longer likes the principle’s/system’s implication, so he hops out of the principle/system and stops using it.

theistic evolution: Proponents of this view believe in God and thus reject philosophical naturalism. But when it comes to scientifically detectable empirical evidence, they believe the processes by which evolution occurred are blind, purposeless, and naturalistic, with no goal-directed activity or supernatural intervention. They believe that God guided

this process in some sense, but in such a way that his involvement is not detectable.

thought: A mental, semantic content that can be expressed in an entire sentence.

type identity theory: The thesis that mental properties (e.g., being in pain) are identical to physical properties (e.g., having C-fibers—brain states—firing).

uniformity of nature: Roughly, the idea that the future will resemble the past, or that unexamined cases of some phenomenon—e.g., undiscovered emeralds—will resemble examined cases—e.g., they will be green.

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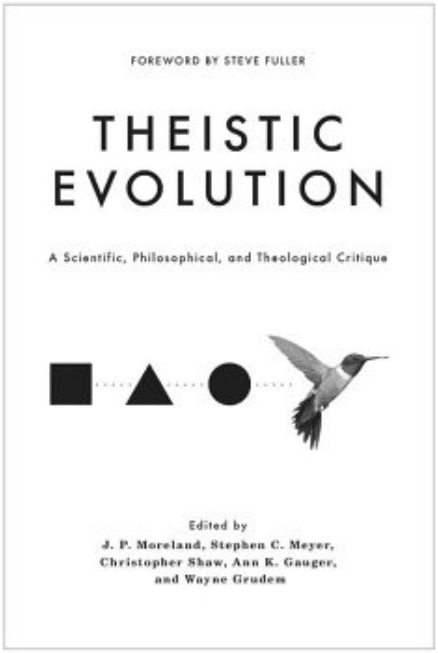

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